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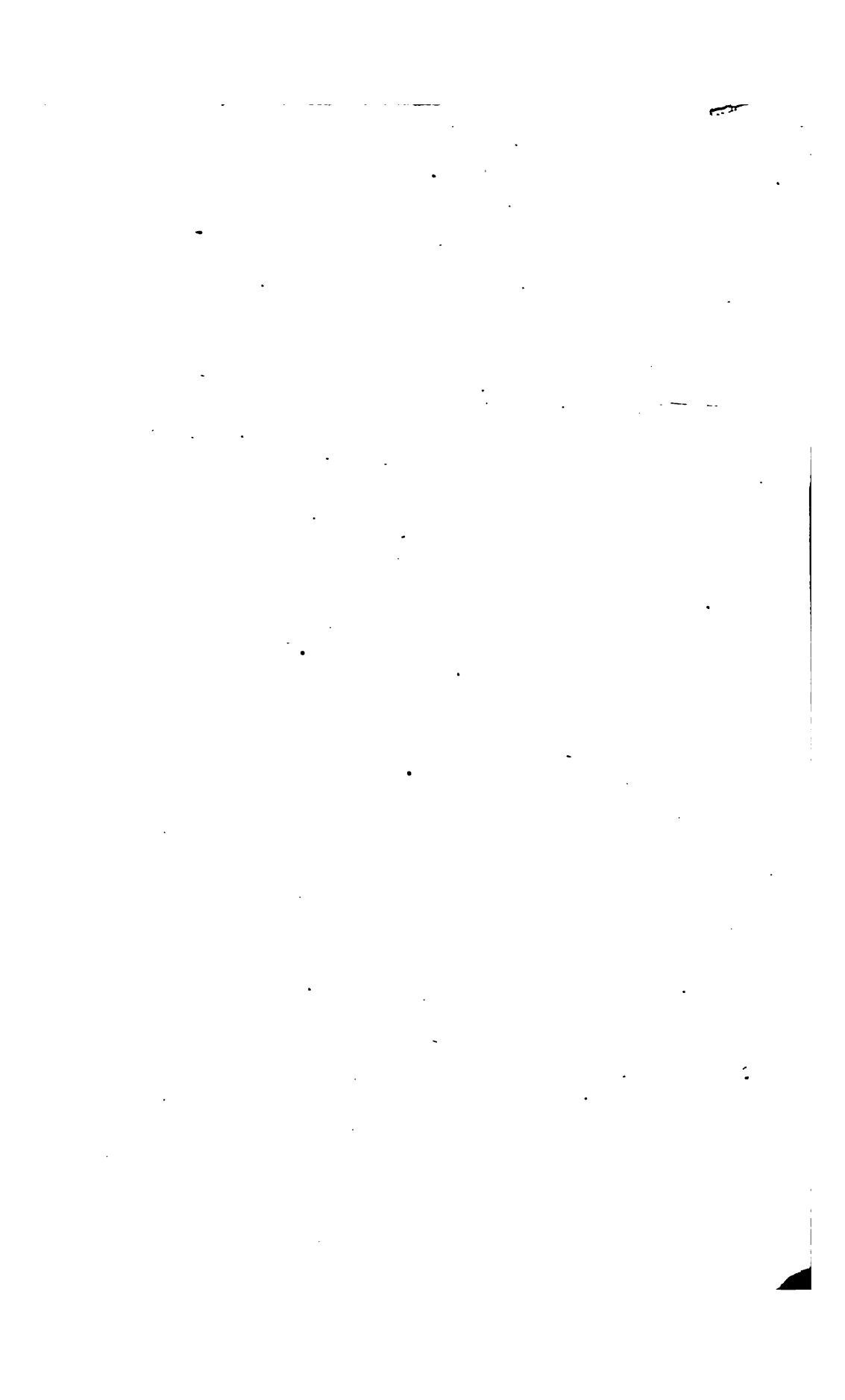
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Original Communications.¹

FERMENTATION: ITS CAUSE AND EFFECTS.²

BY ERNEST LAPLACE, A.M., M.D. (PARIS), PROFESSOR OF PATHOLOGY IN
THE MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA.

GENTLEMEN,—All that lives must die; and dying, disintegrate and resolve itself into elements that enter into new cycles of usefulness. This phenomenon of universal disintegration must have aroused the interest of the human intellect from the first moment that it reached such a state of perfection as led it to inquire into the causes of things. If this disintegration did not exist, the matter of organized beings would encumber the earth, and the law of perpetuity of life would be compromised. A great phenomenon presides over this work; this phenomenon is fermentation.

Our forefathers may have been savages; but they were clever and observant ones. After organizing their own rude arts, they turned beasts into servants; they founded agriculture; planted the grape. This fruit was surely antediluvian, for we are told that Noah, on leaving the ark, planted a vineyard, drank of the wine,

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² Read before the Odontological Society of Pennsylvania, at its regular meeting, November 2, 1889.

and experienced its consequences. But though wine and beer are as old as history, it was not until within the last few decades that anything positive has been known as to the true mode of their formation. Our knowledge in the matter has been almost identical with our knowledge of medicine,—that is empirical. By this is meant that we had observed the facts, aside from the principles which produce them, and which are essential for a true understanding of them. In a word, when light dawned upon the true secret of the manufacture of beer, by the immortal discoveries of Pasteur, that same beam spread itself over the whole realm of medicine; was the light of regeneration to the noblest of sciences.

The brewer learned from long experience the conditions, not the reasons, of success. Often, however, the brewer's beer has fallen into rottenness without any accountable cause. It is the hidden enemies against which the physician, like the brewer, has had to contend that recent researches are dragging into the light of day, thus preparing the way for their final extermination.

While still a young man, Pasteur, who was then a professor of chemistry in the *École Normale*, of Paris, was attracted by a note of the German chemist Mitscherlich, in which he said to the Academy of Sciences: "The tartrate and paratartrate of soda and ammonia have the same chemical composition, the same crystalline form and angles, the same specific weight, and the same double refraction. Dissolved in water, the refraction is the same. But the dissolved tartrate turns the ray of polarized light to the left, whereas the paratartrate is *indifferent*. But," adds Mitscherlich, "the nature and the number of the atoms is identically the same." Pasteur, who was then but twenty-five years of age, discovered that the crystals which turned polarized light were not symmetrical. He noticed that all products of organic life were dissymmetrical, such as starch, quinine, strychnia, etc., while all mineral crystals, or products of the inorganic world, were symmetrical. He immediately suspected that tartrates were organic,—that is, connected directly or indirectly with life. It was a well-known fact that a German manufacturer of chemical products having thrown away some impure tartrate of lime, mixed with albuminoid materials, this had fermented, giving rise to different products. Pasteur reproduced the fermentation in the following way: Taking some tartaric acid, he added a certain amount of albuminous material, and placed it in an incubator. When fermentation had taken place, Pasteur found innumerable small living organisms; and after the process had stopped he polarized the liquid, and found that, whereas before fermenta-

tion the polarization was to the left, it had now turned to the right.

His suspicion was realized.

Hence, this sudden change of the direction of the ray of polarized light was accompanied by a great development of small living organisms during a process heretofore known simply as fermentation. This was the first hint ever gotten of the influence of a living micro-organism upon organic substances. This micro-organism was not present apparently when the mixture was placed in the incubator, and now it existed in swarms in the disintegrating mixture. They surely grew during the fermentation.

Up to this time the most incomplete notions had been entertained as to the true cause of fermentation. *Liebig* said "it was an acidification of albuminous substances when in contact with air;" *Gay-Lussac* thought that the oxygen of the air was the causative agent, for he had noticed that wine had turned sour from being poured from one vessel into another; *Berzelius* and *Mitscherlich* said that ferments acted by catalysis,—that is, by their presence; *Schwann* and *Cagnard Latour* noticed that a living rounded body was present in the manufacture of beer, but it did not occur to them to ascertain what part was played by this organism. As soon as the malt is mixed with hops it is boiled and allowed to cool; this infusion is called the wort, and that is placed in vessels with but one aperture open to the air. Here it is mixed with the yeast. Soon after a brown froth forms on the surface, which is really new yeast, and issues from the aperture falling like a cataract into troughs prepared to receive it. Whence is this new yeast? Weigh it before and after. The brewer sows ten pounds and he collects fifty pounds. Shall we say that this is spontaneous? Are we not reminded of the seed that has fallen in good soil and brought forth fruit fifty- or a hundred-fold? In fact, this seed can be seen budding under the microscope before our own eyes. It is a minute plant, the *torula cerevisiæ*. This marks a distinct epoch in the history of fermentation. But *Liebig* was loath to accept the growth of this plant as the cause of fermentation, and maintained that its life had nothing to do with the process, that it was a purely chemical one, and that it was the chemical nature of yeast, not the fact that it was alive and could develop life, which produced fermentation. In a memorable demonstration, *Ludersdorf* proved the error of *Liebig's* assertion, and that yeast acted as a ferment because of its organized or living character. He destroyed the cells of yeast by rubbing them on a ground glass plate, and he found that, with the destruction of the organism, the

chemical nature remaining the same, the power to act as a ferment disappeared totally. No experiment could possibly be more conclusive.

But in the manufacture of wine no yeast is added. The grape is pressed, and the juice ferments after a short while. The torula soon make their appearance, however, and where do they come from? If the filtered grape-juice be boiled, so as to destroy the germs it contains, and be put in germless air, it will never ferment. All the material for spontaneous generation is there, but the life both in the grape-juice and the air being destroyed, no new life can be produced in the shape of fermentation.

Pasteur has pushed this demonstration still further. The grape is sealed by its own skin from contamination by the air. He contrived a way of extracting the juice without its touching any contaminated substance and placing it in pure air; it did not ferment; then taking the skin of the grape and brushing the delicate grayish dust upon this non-fermenting juice, fermentation soon developed, and the yeast-plant appeared in great abundance; proving that the grape carries its yeast upon its own self. For thousands of years, therefore, the wine-grower has done unconsciously what the brewer does purposely.

The germ of the yeast-plant exists in the air, but not in quantities sufficient to insure rapid fermentation, such as the brewer desires, hence the brewer puts in a quantity himself. Pasteur has defined fermentation as life without air. These germs live on oxygen, as we do, and give off carbonic acid gas; but they do not take their oxygen from the air, they take it from the substance upon which they grow; hence they do not need the oxygen of the air for their development. Hence fermenting substances are placed in vessels with but a small aperture to the open air, where the yeast imbibes oxygen and pours forth carbonic acid. Where does it get the oxygen? It is wrenched from the liquid upon which it grows; liberates carbonic acid gas, and leaves the liquid product as our familiar alcohol.

And in the same way exposing alcohol to the action of the ferment known as the *mycoderma aceti*, acetic acid will be the result.

The air is full of germs of ferments differing from the alcoholic leaven. Expose milk to the air, and coagulation will take place; small globules of butter appear,—the butyric acid fermentation. Within a short while larger organisms are seen wriggling in swarms through the preparation. In curdled milk are found other organisms linked together, as beads on a string,—that is the lactic acid

fermentation. Examine putrefying milk, and it will be seen to swarm with millions of small and larger germs, showing wonderful alacrity of motion. Keep your milk from the influence of the atmosphere, or boil it so as to kill the germs within it, and it will remain sweet, the germs being destroyed. Expose meat to the atmosphere, and it will soon putrefy; it will swarm with the germs of putrefaction, and will soon stink. Keep the germs away, and it will not putrefy. Thus we begin to see that within the world of life, to which we ourselves belong, there is another world requiring the microscope for its discernment, but which, nevertheless, has a most important bearing upon our welfare.

Gathering these facts together, and analyzing them, we see that there are two elements always in action, a seed and a soil: the seeds are floating continually in the atmosphere about us; the soil is the particular substance upon which these germs fall, and at the expense of which they grow. It follows also that the greatest analogy exists between these various germs in the atmosphere and the seeds of various plants that may be wafted by the wind from one spot to another, and which develop when they happen to fall upon a suited soil.

Another fact is that, just as when you sow corn, corn is reaped and not barley, so each particular germ grows its particular kind. Supposing you take a handful of seeds of various flowers, and sow them in the same soil, then the different plants will grow alongside of one another. So also, if various sorts of germs have access to the same soil, they may grow plentifully together, as takes place in putrefaction, where germs of many kinds are seen growing and decomposing the soil upon which they grow, liberating not carbonic acid, as in fermentation, but sulphuretted hydrogen,—the foul smell of putrefaction.

All germs will not grow on the same soil, just as all seeds will not grow in the same ground; some plants being indigenous to some countries and others to different climates. But a very astonishing fact is that one germ, after developing in a particular soil, may leave that soil in such a state as will render it favorable to the development of a germ which could not have developed there before. Such is indeed the case with the *mycoderma aceti*, which could not have developed in the sweet solution. First, the yeast-plant developed there, changing the sugar into alcohol, and now the *mycoderma aceti*, falling into the alcohol, grows abundantly, changing this alcohol into acetic acid or vinegar.

The most important and practical portion of the whole knowl-

edge of the nature and development of micro-organisms is the study of the changes incident to their growth in the soil upon which they develop. The yeast-plant left the sugar changed into alcohol, whose chemical nature and physiological effects are quite different from sugar. The mycoderma aceti has changed the alcohol into vinegar, whose chemical nature and physiological effects are vastly different from alcohol. Likewise the lactic acid germ has produced in milk, which was once sweet, a substance (lactic acid) having corrosive properties, and which curdles the milk.

This new product, which results from the decomposition incident to the development of a germ, is called in medicine a ptomaine. When germs are absorbed from the atmosphere and produce certain diseases, the albuminoids are decomposed within us, and this ptomaine or fermentative product is the chemical poison formed, which, being resorbed by the economy, produces those physiological symptoms characteristic of a disease.

And would a substance putrefy without the action of germs? In other words, is there such a thing as spontaneous generation? Tyndall's and Pasteur's admirable researches have set this question at rest. One will suffice. Having made veal broth, Pasteur placed it in a round vessel, with but a small aperture. This was raised to a temperature of 115° C. for half an hour, so as to destroy all the germs within it, and the tip end of the flask was soldered, so as to prevent further air from coming in contact with the broth. A number of flasks so treated were placed aside. I have one in my possession thus prepared, many years ago, by Pasteur himself, and its contents are as pure as on the day of its preparation. This shows conclusively that by heat he had sterilized the liquid and interior of the flask, and, having soldered the end of the flask, thus preventing any germs of the atmosphere from having access to the fluid, there was no possibility of life developing in it; hence it remains pure, and is likely to remain pure indefinitely.

Now, this simple experiment was a master stroke of genius, for on it is founded our whole system of modern pathology and hygiene.

Do we wish to stop fermentation, putrefaction, contagious and epidemic diseases, we must repeat Pasteur's experiment,—sterilize first; then prevent the germs from having further access to the parts thus purified.

Strange to say, this process of purification was applied to the canning of goods before it was practically applied to scientific purposes. In fact, canned fruits of all sorts are prepared exactly after the manner of Pasteur's broth experiment. They are raised to a

high temperature and kept in air-tight vessels. And what occurs when canned goods become spoiled? Simply, the germs of the air have gotten into the goods, either through some small aperture in the vessel or sufficient heat was not applied at first to destroy them.

Lister, in England, was the first to make a practical application of this to suppuration in wounds. He saw the analogy between the foul smell of a suppurating wound and the process of putrefaction, and concluded that, should he succeed in destroying the germs which had started this putrefying process, and should he prevent further germs from having access to the wound, this putrefaction would cease and the wound heal kindly without suppuration. This he did by sterilizing the wound. There are two ways of sterilizing: (1) by heat; (2) by chemical agents: carbolic acid, sublimate, etc., which have the property of destroying the vitality of most micro-organisms; and when, used in proper strength, do so without impairing the tissues with which they come in contact. The wound is then covered with several layers of cotton that has been sterilized or purified by heat,—and this prevents the germs of the air from having further access to the wound; for as these germs fall upon the outer layers of the cotton, they are caught by the meshes of the small cotton fibres and are not allowed to get any nearer the wound; during this time the normal and unimpeded process of repair goes on, and healing takes place without suppuration or putrefaction produced by germs. And by this glorious discovery Lister has blessed humanity with a reduction in mortality from major surgical operations; a mortality reduced from fifty per cent. before the days of antiseptics to two or three per cent. at the present day in the best-conducted hospitals. Besides, it has widened the domain of surgery, bringing to the surgeon success in such operations, in which he could not hope for success should suppuration take place.

Applying these same principles to dental surgery which is a special branch of general surgery, we are struck by the frequency of processes of putrefaction or fermentation in the mouth. And why? Because the germs of the atmosphere, which we constantly breathe through the mouth, lodge upon some remnant of food buried in the sulci, fissures, and proximal surfaces of the teeth, and find there a suited soil, accompanied by heat and moisture; these germs develop and cause putrefaction, as evidenced by the foul odors from the mouth. Besides putrefactive processes, a fermentative process also may take place in the presence of sugar which produces a cor-

rosive element that destroys the enamel. The germs sink into this impaired spot, and the same deleterious agent being generated there, the process of decay attacks the dentine, the pulp, and an extensive cavity follows. Such being the case for a healthy tooth, well paved with enamel, the process is a much easier and more rapid one when through some accident a mechanical abrasion already exists.

To the honor and credit of Professor W. D. Miller, of Berlin, be it said that he was the first to discover that the corrosive substance so deleterious to enamel, and which results from fermentation in the mouth, was lactic acid, which enters into composition with the calcium salts of the tooth, producing a lactate of lime.

This being the case, as a student of pathology and practitioner in surgery, I conjure you to apply to your special branch of surgery the principles of antiseptis that Lister has applied to general surgery, vouching that you will meet the same grand success. To reach this end, sterilize, and prevent the further access of germs to the parts. Sterilize with the acid sublimate solution, destroying the organisms at one sitting. But when the pulp is dead use the heated platinum broach in the root-canals, then use the antiseptic solution, which will penetrate the minute nooks of the cavity, and destroy those few germs that have perhaps escaped the heat; finally, plug the tooth with aseptic or antiseptic filling. And, gentlemen, as a physician, knowing how many general disorders, gastric and others, are caused by germs that found originally a brooding-place in the mouth, I implore you to give this question of oral disinfection your most scrupulous attention, feeling confident that a rational and persistent use of the antiseptic solutions now within our reach will afford you the fullest satisfaction, for in your treatment you will meet the same glorious success as is achieved in surgery as practised at your doors.

And now, having reviewed the various phenomena of fermentation, we see that in the eternal laws of the universe fermentation was destined as a power for good, and, like electricity and steam, it vastly benefits our existence, if only rightly understood and maintained within its proper bounds; that most of the harm to humanity resulting from fermentative processes is due to our still incomplete mastery of its laws; and that with the present strides of science, we will completely overcome those micro-organisms or fermentative agents that are deleterious to man and his surroundings.

Such is the triumph of the scientific age in which we live, that has disclosed a world about us which we knew not of; a world of

beings consisting of enemies as well as benefactors, in constant and intimate relation with each of us.

We know of numberless stars above, infinitely large, but this newly-discovered world of infinitely small beings, its laws and purposes, is to me not a lesser index to that Power, the Author of them all,—

“That God which ever lives and loves,
One God, one law, one element,
And one far off divine event
To which the whole creation moves.”

THE WASTE PRODUCTS OF THE BODY.¹

BY PROFESSOR CHARLES MAYR, SPRINGFIELD, MASS.

THE chief instruments supposed to be used in a dental office are excavators, pluggers, and forceps, to which may be added vulcanizers, and such appliances; but the chemical “tools” have also been multiplying of late too. The various antiseptics have come in use more and more; anæsthetics and disinfectants, which constitute a large proportion of the *materia medica* of dentists’ use at present, are what might be called of a defensive nature. Very little of it is positive; that is, almost all medicines used are aimed at the destruction of some enemy, not at the strengthening of the resisting body in the struggle for life which goes on and in every cell, every aggregation of cells, every tooth, every individual, every collection of individuals, every thought, and every train of thoughts, every system of philosophy or creed. This struggle for life can be essentially reduced to two contending bodies,—the one the aggressor, and the other the defendant. As in warfare, between the large collection of cells called man the survival of one party is determined by its own strength or by the weakness of the other party. We have in history very many illustrations where a nation has been victorious in its struggle against another nation by its superior strength. Of course one has to be the weaker, but both may be above the average in strength, and yet the still more vigorous party will be victorious. We all want to be conquerors, none of us want

¹Read before the New Jersey State Dental Society, at its nineteenth annual session, at Asbury Park, July 19, 1889.

to be beaten and crowded out; for nature has only one penalty for being beaten, and that is death. The conqueror sooner or later must die. The conquered old Greeks and Romans are dead. Certain elements among them which were stronger than those of the conquering barbarians have survived. A conquest does not always mean a conquest in every particular. The Goths, in the third, fourth, and fifth centuries, conquered the whole of Spain. They conquered the men, but they did not conquer the women. The Spanish women taught the children of the Goths their unconquered language, and thus the conqueror was vanquished on the field in which he was weak. The Spanish woman and her language utterly annihilated the Goths. There are not a hundred words in the Spanish language to-day which testify to the possession of that country by the Germanic invaders for three hundred years, and, if we did not know the events from history, no linguist would ever suspect such a long and thorough dominion.

The same principle applies to every single cell in the individual man. Every man commands an army of thousands of millions of soldiers. The enemy is just as numerous. Each cell has its enemy, each aggregate of cells has an aggregate of cells as an enemy, and the aggregate man himself has another aggregate man as an enemy. What is the aim of man's existence? Certain cells of the brain may have different aims, but man, as a whole, wants to live as long as possible and preserve the aggregate of its army intact as long as possible. By two methods he tries to reach this aim: by weakening the hosts and groups of enemies, and by strengthening his own army and groups of soldiers. His staff of generals—that is, his brain—must equal those pitted against him. His soldiers—that is, his cells—must be equal or stronger than those of the enemy. The generals in the brain employ auxiliary troops to strengthen their army. The dentist is one of these auxiliaries. He has studied certain points about the enemy; he has been a spy in their camp. Under the guidance of that Pinkerton of detectives, Dr. Miller, of Berlin, he has traced the enemy into his lair; he has investigated his method of growth and attempted to reach him in a vital spot. Almost all the efforts of dentists have now been directed towards weakening the enemy. What is the use of a weak enemy if it puts a premium on our own weakness? I think it would be much better to have a strong enemy pitted against our own strength.

To carry out the comparison still further, during our youth we build our fortress on which we have to depend after our growth is finished, until, with an army of crippled, maimed, and exhausted

veterans, we have to surrender. Our lungs lose daily some of their best cell soldiers. Our heart burns up every day a few of the most active workers. It is, therefore, best to start with as powerful an organization as possible. The special branch of the army which we have to consider in this meeting is that of the masticators, a branch of the sutlery department. Now, many a strong army has been beaten in its sutlery department. They do not have to do any active service; they have to attend to, perhaps, less heroic wants than the brain or the eyes, but without strong grinders there cannot be a strong army. The building up of strong teeth in children seems to me to be a far more important problem than the extracting of six-year molars. It is true that General Brain has also provided for that emergency. It has hired steam grinders and furnishes the grinding of the sutlery department. It supplies in hash-shape all vegetables, meats, and cereals. Bread and cheese are made with mushy softness. But without strong masticatory organs we will always be conscious of a weak department in our army. The best and only natural process of growing good teeth in children is to have their parents grow good teeth, of course before the children are born; which saying is not quite as ridiculous as it might at first appear, for it may be observed that parents very frequently do things for the good of their children which they ought to have done before the children were born. But the fact remains, in spite of all those probably correct principles, that children are born with weak teeth. What shall we do? We cannot afford to kill them and grow better ones. For some time it has been the peculiar treatment of dentists to give phosphate of lime and phosphate food in general, with the idea of supplying that which was supposed to be wanting,—the lime salts in teeth. You can pack such children in a lime-barrel, and their teeth will not take up a particle more. You can feed them lime hash and lime stew without effect. The lime has to be introduced through the proper channels and in proper form. The digestive department of the body is just as full of red tape as that of any government. All its supplies have to go a certain regulated course, without which they are not accepted.

Another group attached to the staff of humanity has made the investigation of leaks in the various departments their specialty. Chemists and physiologists belong to that group. Very often they are not admitted to the interior workings of the various departments, but they examine the refuse and see what is going on. They also examine the refuse of the body and try to make conclusions about the processes inside.

The urine is a most interesting waste product. As a rule, I do not think it has been considered to come within the province of the dentist; but perhaps I will be able to convince you that it is very important that he should know something about it. Urine contains a certain quantity of solid substances; the rest is water. The solid matter consists of more than twenty thousand different substances. There is salt, urea, phosphoric acid, lime, potash, soda, magnesia, uric acid, etc.

In order to make a perfect analysis of the urine it is necessary to have a very nice set of chemicals. I have come to certain conclusions in my work, which those of you who are given to that kind of work may be able to appreciate.

If we take urine voided at different times of the day, it shows variations in its specific gravity,—say 1021 in the morning, 1018 at noon, 1029 in the evening, and 1030 before going to bed. That is about the regular course. The amount of urea will show a similar variation. The phosphoric acid will show a corresponding variation, and the salts and uric acid also. There is a law which, strange to say, I have not found laid down in any of the text-books, namely, the relative proportion of those constituents in normal urine is almost a fixed one, regardless of the times.

The most constant relation is that of the urea to the phosphoric acid, which in healthy, normal urine is 100 to 8. If 100 parts of urea are excreted, 8 parts of phosphoric acid have to be excreted. The variation of these constituents in normal urine are from a maximum of 100 to $8\frac{1}{2}$ to 100 to $7\frac{1}{2}$. If this relation of urea to phosphoric acid varies any more than that it shows defective nutrition.

I find that the ratio of phosphoric acid excreted is about the same in food. In the body itself the phosphoric acid bears to the nitrogenous tissue the relation of 10 to 100. If the ratio of free phosphoric acid in the urine is more than 8 to 100, it shows very plainly that the person is living on his body, and not on the food taken. If the ratio is 10 to 100, it is a very dangerous condition. I have found it 11 to 100 during the last days preceding death. If the ratio sinks to 4 to 100, it is a sign that the person is strongly assimilating and gaining in weight. So also does the ratio of urea to phosphoric acid tell us what the state of health of the person is, and is most interesting in that respect.

Dentists have speculated a good deal about the dissolving of phosphates. I have, unfortunately, not been conversant with any specimens from dentists in marked cases to show in what way it

would have a bearing. I should say that if the ratio of phosphoric acid to urea is 100 to 9, no phosphoric acid could be assimilated in the body; and if the ratio be 100 to 4, phosphoric acid and tissues would be freely retained in the body.

Another important constituent is uric acid. That is found in small crystals, which look like Connecticut red sandstone. This uric acid, when perfectly purified, is colorless. We do not know where it is manufactured; but we know it bears a close relation to the digestive process. Uric acid in the proportion of 100 to 3½ shows a strong digestion; in the proportion of 100 to 2 it shows a weak digestion; 100 to 3 is about normal. If you find a high amount of phosphoric acid excreted from the body, with low per cent. of uric acid, the person is feeding on his body. If you observe a low per cent. of phosphoric and uric acid, there is a little wasting away of the tissue, and not very good health.

Another important thing is the sum total of the other constituents. Salt occurs in the urine in variable quantities. It depends upon the food taken. After breakfast the quantity excreted is considerably higher than after supper. It goes through the body without much change; therefore, chemically, the ratio of salt is not very important. Of the other constituents there are several thousand in normal urine that bear a strict relation to the unit of urea. Those other constituents ought to be about as 100 to 40-70; 100 to 120 indicates the formation in the body of abnormal products. There are, furthermore, coloring matters. These are totally unknown substances that we have not yet isolated. There are organic substances, like creatinine, etc.; and finally a small quantity of sugar, which is rarely absent. From an examination of the comparative quantities of these constituents you can form an excellent opinion of the working of the body; better than by any other investigation.

I think the subject of urinary analysis is worthy the attention of dentists. Suppose we have found, after investigation, that the per cent. of phosphoric acid in the urine is high; the person is excreting more, in spite of a good digestion, than he ought to; he is consuming more of his flesh than he ought to. What can we do? Shall we give him acid phosphates? Not at all. The acid phosphate is not the phosphoric acid of the body. It is as different from that of the body as it is from sulphuric acid. Therefore the idea of prescribing phosphate drinks for the purpose of supplying the deficiency of the phosphates seems to me unreasonable and useless. Bone phosphate, made from the powdered bones of animals, was

given, in olden times, in the shape of powdered mice, carefully dried, etc. A little bit of that phosphate may possibly be assimilated, but I have my doubts whether any perceptible particle can be assimilated. The assimilating apparatus will take only things that are presented in a certain prescribed form; it will receive the mineral elements when presented in combination with albuminous substances, as in bones, plants, flesh tissue, etc., but it will not accept phosphates alone. So I think that in cases of excessive excretion of phosphoric acid it is of no use to try to put more into the body; it does not do any good. We have to see whether that excessive excretion has not something to do with wrong digestion. As a rule, where there is an excess of phosphoric acid excreted you will find low uric acid, showing that, no matter how much phosphates you put into the body, they are not assimilated. We have to direct our attention to the digestive process. I am not sufficiently conversant with the methods which you use to correct or improve them.

If a child were to be fed exclusively on potatoes, there might be a certain deficiency of phosphates in the body; and I do not doubt that, to a certain extent, a lack of hardness in the teeth of the child might be ascribed to the defective food.

It has been found that a certain ratio must be preserved between urea and phosphoric acid, in order to keep the proper balance of the economy of the body.

This conclusion, which I have reached by comparison of thousands of experiments, seems to me a very valuable one. By examining the urine of a patient whose teeth seem to decay and go rapidly, something valuable might be found, in order to see whether this is owing to a solution of the phosphate substance within the body or to the action of external agencies. This might be of special value in children. Now, perhaps having discovered such a leak, what can we do? We have to examine whether the wastefulness in this department is owing to incompetency or to lack of supply. If the first is the case, as we cannot do away with incompetent intestines, we must try to make them more competent by either vigorously arousing their laziness with what we call tonics or by gently pleasant treatment in the form of rest. The treatment has to be adjusted to the individual. If, on the other hand, we are well satisfied that there is a deficiency of supply, we have excellent and abundant supplies. Flour of the entire wheat, rye, and oats contain a vast amount of phosphates, and in a form in which they are combined with albuminous substance, and accepted by the red-tape department of the body. If they are not combined with albuminous sub-

stances, they are most universally rejected. Another very valuable indication as to the requirements of this department may be furnished by another product of waste of the body, namely, uric acid. We do not know exactly from what it is produced, nor what part of the body produces it, but a relation between the digestive powers of an individual and the excretion of uric acid certainly exists. Especially in disease of the kidneys the ratio falls very low, while in those of the stomach it goes high. If we therefore find a deficiency of phosphoric acid excreted with the ratio of uric acid high, we may consider that person as suffering, if he suffers, from too rapid digestive process, a thing just as bad as too slow. If we run a boiler which requires for good working two tons of coal a day with the consumption of four tons, we not only waste money, but we burn out the boiler much quicker. If the excretion of phosphoric acid is normal, while that of uric acid is high, probably only dyspepsia is indicated,—that is, irritability of the stomach. If phosphoric acid be normal and uric acid low, the person is in danger of having to live on his body at the least disturbance of digestion. If, on the other hand, phosphoric acid is high and uric acid is low, that person is severely sick. He lives on his body and assimilates but little.

Thus you will see how those two constituents alone tell a pretty fair story of the working of the sutlery department of the body, and if a body lives on its own phosphates, both will suffer more or less; with the phosphates there go also a number of cells and cellular substance that ought to be used otherwise than for anthropophagy.

As you will see, I don't take any great stock in the various forms of acid phosphates, the phosphate drinks, etc., which produce as their most important result strong plethora in the pocket-book of makers and corresponding pecuniary depletion in the consumer, which, furthermore, tax the kidneys which have already plenty to do with the unnecessary call for earning money for a patent medicine maker.

SENSATION.¹

BY GEORGE W. WHITEFIELD, M.D., D.D.S., CHICAGO.

(Concluded from vol. x. p. 788.)

It is the law of nerve-action that a sensation once transmitted is more easily passed over the same nerve-track and more readily affects the nerve-centres ever afterwards; and in proportion as the same sensation is repeated over the same track, not only is the transmission more easily accomplished, but all the reflexes are similarly affected; hence the dexterity acquired in any art by practice,—dexterity consists in well-organized reflexes, produced by the same sensations being passed over the same nerve-track till you might say the track is worn smooth. In other words, the habit is formed, either physical or mental.

The following, from a newspaper clipping, illustrates one phase of the subject: "The regular tracks of thought sometimes betray the speaker. Thus, one of our ministers, speaking, from the pulpit, of the late Horace Cooke, called him Horace Greeley, there being a well-worn track that united Horace and Greeley.

"And another spoke of the sufferings of our Lord in the garden of Eden, the tracks between garden and Eden being better worn than between garden and Gethsemane. When a mind is in ruins it often runs in these well-beaten tracks. A very eloquent Presbyterian divine, happening to use the word Peter in one of his sermons, paused, and said, 'Peter, Peter, pumpkin-eater.' This was the last time he was permitted to occupy the pulpit."

Then, again, subjected to the influences that have gone before of the same kind, the nerves are modified by the equally important influence of sensations of a different kind.

Let me speak here of a theory of memory. Some physiologists teach that nerve-cells are not originally gray, but that the gray tint is imparted to the cells that have been called into use, and that these cells are capable of receiving or responding only to such sensations as have passed over them, and might be compared to sheets of paper that are written on and filed away for future reference; and a good memory means that the librarian has filed away

¹ Read before the Chicago Dental Club, September 28, 1889.

these cells in systematic order, so that they are easily found when needed.

For convenience, I have spoken of the sensations as if there were simple sensations, while, in fact, such a phenomenon never occurs. There are, however, paramount sensations,—that is, of all the sensations coming to one of you at a given instant of time, there is always a paramount sensation, and it is the one your attention is called to, as you at the same instant of time are receiving sensations by way of all the senses, but the sense that your attention is called to is the sense that receives a sensation, that becomes a cognition, but even that sense is incapable of receiving more than one sensation at the same time.

One would naturally suppose that the paramount impression on the simple nerve-centres or the sensorium would result from acts of paramount importance, which is not necessarily the case, as attention and habit cause sensations of minor importance to produce results out of all proportion to their real value.

Why do we not profit by this fact when operating on sensitive teeth?

Our appreciation of all sensations, no matter by which of the five senses they are received, is a mental act, and the meaning attached to that sensation is biased by the mental habits of the person receiving it. The effect of sensory impressions on the reflex centres, as well as on consciousness, depends on a great variety of interacting causes.

Foster says, "All the information which can be gained by the eye is limited to the field of vision, and, provided that the relative positions of the sensations in the field of vision remain the same, the actual position of external objects might, as far as vision is concerned, be changed without our being aware of it. As a matter of fact, the field of vision, in one important particular, does not correspond to the field of external objects. The image on the retina is inverted; the rays of light proceeding from the object which by touch we know to be on what we call our right hand, fall on the left-hand side of the retina. If, therefore, the field of vision corresponded to the retinal image, the object would be up-side-down, and seen on the left side. We, however, see it on the right hand, because we invariably associate the right-handed tactile localization with left-handed visual localization. That is to say, our field of vision, when interpreted by touch, is a reinversion of the retinal image."

We never hear anything just as the sound is produced. Take a

person who never heard a telephone, and let him apply the ear-piece to his ear; how natural for him to be deceived with regard to the evidence of his sense of hearing! In fact, without bringing other senses to assist, it is hard to localize the sound, and it is the same with regard to all our senses.

Our accumulated experience enables us to form a sense-judgment of what has taken place, yet how often are we deceived!

It takes a very appreciable length of time for a sensation to be conveyed from the periphery to the nerve-centres, where it takes another appreciable length of time for the pulse of excitement to take place in the nerve-centres, and another space of time for the motor impulse to be carried to its appropriate organ. But if an appreciable length of time is required for a sensory impulse to become a conscious sensation, a still longer period of time is required for that sensation to pass away, as is illustrated in the rapidly-revolving point of fire. It appears to be a circle: before one sensation has had time to fade, the point is back where it started.

Every one of you know how the sense of sight will play you false on a very clear or very dull day. Any object that you are not familiar with is liable to deceive you with regard to its size, unless there is something near of a known size to compare it with. Men standing near an object that is taller than we expect appear to be much shorter than they are.

Our love of art (the grand and beautiful) depends largely on the fact that many things may be suggested by the few. In this way the eyes appeal to our imagination. A picture is more or less perfect as the artist is capable of making it appear to contain more than is really on the canvas. A caricature depends entirely on what is suggested,—and does not music do the same?

Without the several senses the human mind would remain a blank forever, as all sensations are received by way of the five senses,—that is, so far as our present knowledge goes. I would like to dip into the probable but uncertain ground of psychology, but my paper will necessarily be too long if I give but a superficial glance at my subject,—sensation.

No one sensation could impart much to our consciousness if received only for the first time; but when different sensations are reproduced numbers of times, and the recorded impressions are compared with themselves and with each other, there is established the superstructure of memory, ideas, and perceptions, the arrangement, development, and particular use of which constitute what is termed culture.

Professor Alexander Bain, the noted Scotchman, says that "knowledge begins with differences. We do not know anything of itself, but the difference between it and something else." Consequently, the person is most cultivated in music who can perceive the most difference in time, pitch, etc.; so in a general sense those most cultivated perceive the most difference in all impressions received,—while he is wise who is capable of profiting by them, and formulating these impressions into ideas, and using them as occasion may require. These defined qualities we call mind.

I have been speaking of sensations received by the nerve-centres from without, as rays of light falling on the retina cause a consciousness of light. We become conscious of something touched,—vibrations in the air (unless we accept the substantialists' theory of the entity of sound) convey to our consciousness the sense of sound,—we hear.

Minute particles of matter floating in the air coming in contact with the lining membrane of the nose, we have the sensation of smelling; and other particles mingled with the oral secretions coming in contact with the gustatory or taste bulbs, there is passed by the nerves to the sensorium the sense of taste.

Under the influence of multiplied sensations the nerve-centres become modified in their action, so that after a while a slight impulse is sufficient to arouse as much action as a stronger one could do at first. You can each demonstrate for yourselves that by irritating the optic nerve by pressure on the eye, you will see light. If the irritation comes from a blow, you are liable to see stars.

Sensations become incorporated into the very substance of the nerve-structure, so that one sensation is capable of calling out indefinite numbers of other sensations or memories of other sensations, as the smell of fish cooking, coming from some kitchen, may arouse memories of some exploits with the rod and line. You perhaps recall some shady nook where you have angled for bass. You can even hear the water ripple as it eddies around a stump that juts out into the stream, and perhaps you recall the balmy fragrance from the wild apple-blossom overhead, hearing again the clear whistle of the bobolink as he perches on a reed across the stream.

All these sensations may be caused by the commonplace odor from a kitchen range. Nor is it at all necessary that there should be first a sensation received from the afferent nerves to start a-going all this train of sensations, as the mind is capable of initiating the first impulse and all succeeding impulses.

These centrally initiated impulses are what we, as dentists, need

to know a great deal about to manage intelligently many of our patients, for there are many—women especially—who are not trained mentally, and who think that there is nothing less true than that one cannot believe the evidence of the senses.

Attention plays an important part in the phenomena of sensation and perception. A sensation that would pass unnoticed while the attention is engaged becomes apparent as soon as the diversion ceases. Attention renders one acutely sensible of what would pass unnoticed under ordinary circumstances.

You probably all know of good operators who have among the public the reputation of being harsh, solely because they fail to profit by this fact. The employment of mental anæsthetics is more than profitable,—it is humane. Our reputation is largely measured by the mental training we give our patients. For nothing is more true than that a painful operation can be rendered bearable (as we might say) by proper mental handling before and during the operation.

Do not accuse me of being a metaphysician, but think of the fact that we are incapable of receiving more than one sensation at one time, and that attention determines what that sensation shall be. A juggler engages your attention, and does his tricks before your very eyes without you seeing them.

An operator can, by controlling the attention of the patient, perform painful operations with but little inconvenience to the patient. This can be done without the unseating of the patient's reasoning power by hypnotism, provided the operator can inspire the patient with confidence, and to do that he must have confidence in himself, besides possessing an amount of sympathy, a strong will, and a thorough knowledge of his business. He brings into play his individuality, and accomplishes the task, as the hypnotist would say, by suggestion.

Attention determines the quality of the sensations we receive.

If you will carefully read the evidence offered in a court of law of some occurrence witnessed by a number of people, all of whom testify under oath, trying to be truthful in their statements, you will find a great diversity of statements, each one perhaps equally true, and stated as each one saw the occurrence, modified by the temperament, surroundings, and mental habits of the person. Each one would be impressed with what to that person was the paramount sensation.

Among your acquaintances you can recall persons who always catch those sensations which are ridiculous,—they see the funny

side of life; while there is old Longface who taints the very air with melancholy, seeing yawning graves even in street excavations; he believes that all the world is in league against him. Then there is the man who sees suspicious actions in every one he meets. Compare this man's mental habits with the hearty, whole-souled individual who sees the silver lining in life's blackest storm-clouds. He rises above all ills, and says he is "glad to see you" in a manner that convinces you that he means just what he says.

How true this remark, which I heard Talmage make,—*"The world is the color of the glasses we wear."* The dyspeptic views the world through colored glasses. We expect to find him on the negative side of the question *"Is life worth living?"* while the solution of the conundrum depends upon the condition of his liver.

We are constructed much like a piano. Raise the cover of the instrument and halloo into it, and the sound sent back to you will be produced by the strings that are tuned to the same pitch as your voice, while all the rest will remain silent; so with our mental instrument: we tune it to catch the impressions we wish to receive. We may be unconscious of the act in this regard, as our inherited propensities, our surroundings, and our associations may have determined the class of impressions that we shall receive before we are capable of taking charge of our own education. But he is not worthy of the name of man who will make this excuse for continuing mental habits that are contrary to his judgment or wish. A man can make himself what he wishes to be if he will: apparent physical impossibilities will melt away to a large extent. We receive just what we have trained our minds to receive. On this principle a man is just what he will make himself, and he is not well balanced mentally who cannot make himself what he wishes to be.

This, I admit, is a broad statement, but science will bear me out in it.

There is a trite old adage, *"Evil communications corrupt good manners."* For, what we perceive is governed almost entirely by what we train our minds to receive, as the interpretation of all sensations is a mental act. This being true, as can be proven, what more simple or easy to comprehend than this,—we are all free moral agents? A man is what he makes himself.

Excuse this diversion. I am drifting from my subject.

I was saying that habit and attention largely determine what we see and hear, and that what we see and hear is only imperfectly received, as only one of our senses can receive a sensation that shall

become a conscious sensation at the same instant of time, so that all other sensations are lost or so imperfectly received that we are conscious of a vague something that we strive to give a meaning to, and, if we have a similarly recorded sensation to compare it with, we may, by using our reasoning powers, give the sensation its appropriate meaning.

I stated that a single sensation is capable of calling up other sensations or memories of other sensations, and that the sensation that shall start a-going this wonderful power of memory may be centrally initiated; that the mind is capable of initiating the first and all succeeding sensations, and that they are just as real as if they were received by way of the afferent nerves from the external world. You will all admit, as they are so tangible, that they often deceive even the most careful of us, and how much more are they liable to deceive one whose mental balance is imperfect!

What I wish to speak of now are these centrally initiated sensations, and the danger of mistaking them, as so many do, for sensations of an external origin, for these pulses of nervous energy of cerebral origin are accepted as evidence of bodily conditions by a large portion of the community. People of the emotional temperaments have a pulse of action rising higher than occasion requires: an explosion of energy takes place when a mere pulse would be the expression in an ordinary person. These people allow the evidence of their senses to deceive them,—that is, they allow sensations of a cerebral origin to impress them just as they would those reaching the sensorium by way of the afferent nerves.

To illustrate: A lady sitting in my office, while I was using my electric motor, complained of a headache; as soon as I commenced to use my instrument she said the headache had ceased, as electricity always cured her headache. Now, the electric current did not pass near her, and it was impossible for her to receive any benefit from it: it was a freak of the imagination. This person interpreted the assumed evidence of her feeling by another set of emotional evolutions. This person lacked what many others do whose ideas of their bodily conditions are the result of these double pulses of centrally-excited nerve-action. Some of these creatures, where mental discipline is at a big discount, are apparently made up of highly-explosive material; they go into ecstasies of delight or are plunged into the depths of melancholy by occurrences that would go unnoticed by a person possessed of a well-balanced temperament. Such a person is always having queer or horrible sensations in that portion of the body to which his or her attention is directed from any cause,—most

often in the back and head. And why should there not be strange sensations in these nerve-centres, where such prodigal waste is constantly going on, where violent explosions take the place of throbs of nervous force? These people give to their sensations names which usually correspond to nothing that they have any previous knowledge of.

Emotional people are apt to be "marked" with certain antipathies; certain things which they eat will have peculiar action on them. I do not think that this can be easily combated; it is incorporated into the very structure of the individual. I know a cultured young lady of rare courage and splendid mind, a leader and queen among women, who will almost lose her self-control if a cat approaches her, while she will not hesitate to mount and ride the most fractious horse with absolute confidence. In nothing else does she know what fear means.

My argument is not against emotional people; it is only that they shall know how to distinguish between emotions centrally initiated and those from the periphery. For, what a dull, cold world this would be should all emotional people or all emotions be banished from it! Emotions are the bonds that unite the home; they are the main-spring of the genus. What would inspire us to prolonged exertion save our emotions? Was it not the enthusiasm (emotions) aroused in loyal breasts by our patriotic and soul-inspiring war-songs that won us our men and victories in the late national unpleasantness? "We are coming, Father Abraham, ten hundred thousand strong." Did not these words carry truth with them? How they thrilled even the dried bones of apathy! The emotions nerved the delicate man to endure hardships where the less emotional man with stronger physique succumbed,—on the march, in the field, and (where the emotions manifest their greatest power for physical weal or woe) in the hospital: where hope was gone men died from trivial injuries, while the enthusiasm inspired by success or the hope of seeing loved ones would restore men who were literally shot to pieces.

Persons possessed of good education, "smart" people, people whom we naturally look to, expecting from them great things, those whose mental poise we would not think to question, are often guilty of accepting memories of past sensations as evidence of present conditions; for this is what these centrally initiated sensations are,—they are distinct memories of sensations that have been passed over the nerve-track and have worn the track smooth. As I stated before, in speaking of habit, by irritating the optic nerve

by electricity or a blow we perceive light, irritating the auditory nerve produces sound, and interfering with our pet, the fifth pair, after it has been for some time conveying painful sensations, will often cause it to transmit those sensations again, even when the irritation is not of a painful character.

You probably all will have patients tell you, as I have had them tell me, that they always have a tooth filled twice,—once in the dental chair, and then afterwards their mind calls up to consciousness memories of the operation, and they live the time over again, going through the whole operation, experiencing all the pleasant (?) sensations.

These centrally initiated sensations may be distinct memories, as I stated before, or vague shadowy memories of sensations partly forgotten, or but partly or imperfectly received, or they may be a combination of many sensations that have passed over the nerve-track, not being exponents of any sensation.

As an illustration of the first class, I will give the experience of a young lady of undoubtedly good education, but of slightly æsthetic tendencies. At the institution where she was a student she with a number of others formed a circle for testing their ability to endure shocks from an induction coil. As the result of the shock she received, she had a violent headache, and each day after that, when they performed experiments in the class, she would have a recurrence of the headache, although nothing would induce her to take hold of the handles again. Now, while it may be that the first headache was caused by the shock (which I doubt), each succeeding attack must have been caused by these centrally excited sensations, as the electric current would follow the conductors as accurately as the water will flow through the water-pipes.

With the teeth, it is not always that an operation is painful, but attention renders one hypersensitive.

Here it is again. Attention determines what we shall become conscious of. The degree of consciousness of a sensation depends on the degree of attention paid to it. John may be sick while contemplating the unfinished task, while base-ball means changed conditions and occupied attention. The more our attention is called to bodily ills the more we exaggerate them, while if something drives self out of our minds we begin to improve. Does the metaphysician tell the dyspeptic to eat this and not to eat that? No: it would defeat the object. He tells the patient to go about his ordinary employment and let the stomach alone. The stomach when left alone will usually take care of itself. Poverty would cure

many of the incurable invalids that can receive no good from their physicians.

It is a well-known fact that many people are capable of self-hypnotization,—that is, they surrender their entity to an idea, just as to the hypnotized patient a suggestion of an idea makes that idea real. Bennett mentions the case of a butcher who wished to place a heavy piece of meat on a hook above his head; he slipped, the hook caught him by the arm, and he remained suspended. He was taken down half-dead, his sleeve was cut open, and, although he complained of great suffering, as soon as the arm was exposed it was found to be absolutely intact: the hook had only penetrated the coat-sleeve.

This novel case has a parallel in many bed-ridden invalids who have been ill for years. Yes, I mean they are sick. These patients received the class of sensations that they train their nerves to receive, which in turn so modifies their structure that organic structural change takes place. Such patients are more to be pitied than those who are ill from structural change without the modified nerve-action, as in one case when the cause is removed the nerves resume their normal action, while in the other the pathological condition is due to perverted nerve-action, produced in turn by the will of the patient governed by attention,—victims of ideation due to suggestion.

I know that I am laying myself open to harsh attacks by those who are really sick, but such sickness is due to the same causes that produced burns, etc., in the following subjects of hypnotic experiments, except that these patients are their own hypnotists.

Charcot, at the Salpêtrière has produced the effect of burns on the skin by means of suggestion.

During a *séance* Bourron and Burt, professors of the Rochefort School, have produced blood-sweat by suggestion. On one occasion, after one of these experimenters hypnotized the subject, he traced his name on the subject's arm with the blunt end of a probe, and told the patient that at four o'clock he would go to sleep, and blood would issue from the lines on his arm. The subject went to sleep at the time, and the letters appeared in bright red lines with an occasional minute drop of blood. *This* subject in a spontaneous attack of hysteria commanded his arm to bleed, and soon after the cutaneous hemorrhage just described was displayed.

It is also well authenticated that any part of the body of a hypnotized patient may change in volume, simply owing to the fact that the patient's attention is fixed on that part. This influence

may be exerted in hyperexcitable subjects by the simple phenomenon of ideation on the vaso-motor centres.

Disease in emotional people is not as often imaginary as due to the imagination. It is the physiological excitement of peripheral sensations till habit is formed and disease results, and it can be combated by the nerves that caused it.

Expectation—faith—will cause that change to take place. It may be faith in the physician, faith in prayer, change of climate or surroundings: the patient's attention must be drawn from his trouble.

It is not the object of this paper to attack any beliefs,—it is simply to call attention to laws of nerve-action.

I will state, in closing this long paper, that persons of highly sensitive nervous temperament do not possess that quality of level-headedness requisite to put their sensations into the mental balance, testing them to know for a certainty whether they are initiated at the cerebral end of the nervous system or are received by way of the senses, doubting even the evidence of their senses until their reason confirms the sensations. In fact, unless such persons are possessed of mental attributes that even a person of a wide mental range is often deficient in,—viz., the ability to weigh thoroughly all sensations received, giving just value to all by the aid of the reason, rejecting the spurious or imaginary sensations,—in fact, subjecting all sensations to the crucial test of mental analysis,—if, I say, such persons do not possess those mental abilities and use them, they will constantly be liable to deception.

Reports of Society Meetings.

MASSACHUSETTS STATE DENTAL SOCIETY.¹

BRIDGE- AND CROWN-WORK THIRTY-FIVE YEARS AGO.

BY D. C. ESTES, D.D.S., LAKE CITY, MINN.

WITHOUT circumlocution, and with a desire to tax the time of this convention as little as possible, I ask your attention to the following very briefly stated facts:

In 1853 I was a student in the dental office of one Dr. Dumon, in the city of Albany, N. Y., and, after a few months of study and practice, was able to do about all the mechanical work connected with the office.

My preceptor was a skilful operator, a very close-mouthed, shrewd business-man, and had, for those days, a large practice. He advertised very extensively, and often boasted in the *press* of the amount of work he was doing; and in consequence of this course he was, so to speak, an isolated dentist, having but little communication with the local members of the profession. In the insertion of artificial dentures he was as proficient and as successful as any man I have since known, and resorted to about all the methods known to the profession of to-day. What is now known as bridge-work I know he practised, for the mechanical part of the work I did with my own hands, he alone directing and doing the adjusting. I supposed the method was common, and gave it no more attention than other kinds of work, and it was some years after I left his office that I learned that it was, perhaps, original with him.

Some three years after this time I became intimately acquainted with Drs. Douglas, Wood, and John Austin, who were then practising in Albany, and I made the method known to them. I am quite positive that Dr. Austin did some work of the kind, and perhaps the others did. All these men, together with my old preceptor, have, I believe, long since passed away.

I will take time to describe only two pieces of bridge-work

¹ Semi-annual meeting, Boston, June 6, 1889. The printing of the proceedings has been unavoidably delayed on account of non-receipt of papers.

which was done in this office. I do not remember what name he gave the work,—probably no particular name.

First Case.—The insertion of the right inferior cuspid and the adjoining bicuspid. The root of the cuspid remained, while the bicuspid had been extracted. The root was first carefully treated, drilled, and shaped, an impression taken, models made, dies cast, and a gold plate about one-quarter of an inch wide swaged to fit over root and all. Then a hole was punched in the plate directly over the root-canal, as indicated by the impression, a gold pivot inserted and firmly soldered. A short clasp to partly grasp the second bicuspid was then attached, after which the trial was made, and the articulation perfected in the usual manner. Common, plain plate teeth were then backed and soldered to the plate or bridge. The final adjustment was accomplished by partially filling the root-canal with amalgam and pressing the pivot and plate firmly into place. Just above the gold clasp, on the second bicuspid, a cavity was drilled, and a projecting gold filling inserted to keep the clasp and that end of the plate firmly and permanently in place. This job was a beautiful piece of work, and, as far as I know, successful in every respect.

Second Case.—A young man had had the two central superior incisors knocked out and the two laterals broken off. The roots were excised, nerves extracted, drilled, and otherwise properly shaped, and then, as in the first instance, a bridge or narrow plate, with metal pivots, constructed and inserted precisely as in the preceding case, only there were no clasps on the adjoining teeth. The metal pivots were slightly notched, but not, strictly speaking, barbed, though answering the same purpose.

I now pass to consider the methods practised by my preceptor for the insertion of what was then termed pivot-teeth, but was really crown-work then as much as it is to-day.

In the first place, every root was thoroughly treated and medicated, no matter what the time and labor required. Creosote was his great medicament, and in his hands appeared to be really a specific, for with it he cured all ulcers, so that, after the insertion of a pivot, no evil effects were discernible. The thorough preparation of the root was the secret of his success, for to solidly attach the crown was much more easily accomplished. The same for many years has proved true in my own practice.

Both wood and metal were used as pivots, which were cemented in place with either amalgam or gutta-percha, or what was then known as "Hill's stopping." To use the latter, the pivot was well warmed and enveloped in it, and while in a soft state inserted in

the prepared canal of the tooth, and then pressed or driven home. In case of a badly-decayed root, all the carious parts were first removed, then the root properly medicated (ulcer cured) and drilled, after which a temporary polished brass pivot was inserted. Around this, amalgam was firmly packed with fine instruments, and the lost parts of the root built up until a firm base for the crown was secured. The slightly-projecting end of the temporary pivot was covered over with gutta-percha or wax, and the patient dismissed until next day, when the brass pin was removed, the root further shaped, and the crown finally adjusted with wood or metal pivot.

In cases where a thin tooth was required, on account of the peculiar occlusion of the antagonizing teeth, a gold cap was fitted over the root, a pivot soldered to this, and a plate tooth attached to the cap and then inserted in the same manner as described for bridge-work. I have practised this method myself and found it successful. Of course, all will remember that thirty years ago, and even later, all our crown-work was confined to the incisor and canine teeth, while we have at present crowns adapted to teeth with more than one root. However, before these were known, more than twenty-five years ago, I inserted my first artificial crown on a plurality of roots.

The roots of the first right superior bicuspid were drilled and shaped for base of crown, then a gold cap, as described above, was properly fitted, into this two metal pivots, corresponding exactly to the position of the two root-canals, and then a bicuspid plate tooth was backed and soldered to the cap, and finally adjusted in the usual way. I knew this case to have lasted more than twenty years, when I lost track of the patient. I have never since been able to do a more perfect piece of work, even with all our so-called modern improvements; and I may say that I have never seen a more serviceable job from the hands of any man. This, remember, is said for the method, and not the operator.

In conclusion, let me say that long ago I ought to have made the above facts known to the profession; but having six years ago lost all memoranda, all records, and most of my worldly effects by fire, I became, foolishly perhaps, completely disheartened, and resolved to lay aside the pen. Wiser resolutions, however, have prevailed, and now, with sight, nerves, and muscles unimpaired, I will join in with any young man of my age in the profession for a right-down lively race for the dental perfection. And God grant that we may not be called to cross the *bridge* and to receive the *crown* until we have fully attained unto this perfection.

HEALTH IN THE OFFICE.¹

BY H. B. NOBLE, D.D.S., WASHINGTON, D. C.

SINCE health is the corner-stone of all good work, either of body or mind, we venture on a few suggestions as to how this may be secured in our office-surroundings.

Pure, fresh air is of prime importance to health, yet how little value seems to be attached to it, if we may judge from the close unhealthy atmosphere of many of our dental operating-rooms, charged with the concentrated emanations from iodoform, creosote, and half a dozen more ill-smelling compounds, and mixed with the perfumes of dead pulps and foul teeth. Though the operator may exist in these improper surroundings for a long time, yet nature, insulted by such treatment, finally rebels, and protests in the form of headaches, backaches, weakened eyes, and the like.

To secure a healthy office we must have good light and good ventilation.

In regard to light, north, south, and east each has its advantages and disadvantages.

The north is a clear, steady light, but is not strong; and in the short winter months and cloudy weather its defects are clearly seen and felt.

The east is a good morning light, but is weakest in the closing hours of the day, just when one is tired and wants the best light possible.

A south light is the strongest and longest, and, if properly regulated by white curtains in the middle of the day, the best.

A west light should never be chosen if either of the others can be had, as it will be weak in the morning and bad in the afternoon, even if you are protected from the direct rays by a necessary curtain.

The dental operating-room should not be a small one, or a box partitioned off from an ordinary room, without apparent thought of air or ventilation. This condition of affairs is often seen in our large cities, sometimes several of these "stalls" being found in one end of a room. On the contrary, the operating-room should be of good size and separate from the parlor, or anteroom. The laboratory

¹ Read at the semi-annual meeting of the Massachusetts State Dental Society, Boston, June 5, 1889.

should be a commodious, light, sunny room, not the little back pantry-closet or dark, damp cellar often seen.

Sun and air must be had if either good health or good work is expected.

Then have all medicines in glass-stoppered bottles, in a case, so as to keep the office as free as possible from disagreeable odors.

It is not at all necessary to have one's office, instruments, or person so saturated with creosote and iodoform as to advertise one's calling. This is neither gentlemanly nor agreeable. No professional man is so likely to neglect proper exercise as the dentist, with his tired back calling him to the lounge or easy-chair; but air and exercise must be had, either by riding, driving, or walking. To this end it is well to have the office separate from the dwelling, so that in walking back and forth the eye may be allowed to take in fresh scenes and the lungs fresh air, thus refreshing both mind and body.

DISCUSSION ON DR. NOBLE'S PAPER ENTITLED "HEALTH IN THE OFFICE."

Dr. Geo. F. Waters.—Some time ago I tried to solve the question as to which was the best kind of light, whether the direct or the reflected rays of the sun. The first thought that came to me was, What action does sunlight have on the body? I had a double convex lens, silvered on one side, and with this I discovered that a ray of sunlight striking on my hand or foot gave tonicity to the body; it caused a contraction of nerve-fibres. After discovering this, I mentioned the matter to a medical friend of mine, who was rather sceptical, but still open to demonstration. I told him to take the glass and get a focus, so that he could see the action of the iris. He held the glass, and with a mirror I threw the light on the back part of his head. I threw it on his hand, and he said, "I think I can see some of that light." I took a book, and thoroughly protected his eyes with it, and he found that whenever I threw the sunlight upon the surface of his body the action of the eye told it at once. I have come to the conclusion that sunlight upon the skin—exposed a long time—causes arterial tension. This brings on headache and meningitis,—sunstroke, which is nothing more than apoplexy,—relief from which is obtained by bringing the blood from the brain back to the heart. I concluded that for my eye a north light would be best. I experimented some with some tadpoles that were just hatched out,—little fellows,—and part of them I put in a closed vessel with some plants, and set it in the sunlight. A similar vessel, filled in the same manner, was placed in the north

light. Both vessels were filled with the same kind of water; and the result was that the tadpoles that were placed in the north light grew to be very large fellows, while those placed in the sunlight became frogs while they were very minute,—perfect frogs, only one-half inch long. That was the tonicity of the sunlight contracting the cells.

Dr. J. N. Crouse.—Are you sure, doctor, you had the same species?

Dr. Geo. F. Waters.—There was no doubt about it. My reason for selecting the north light was that, in a majority of cases, when persons use light on their work they prefer the north light. It is the case with engravers. They never allow the sun to shine upon their work, but want the reflected north light. The essayist's idea of the size of the room is good, although I do not care to have a room so large that any number of persons, who are not interested in the work going on, can press in and crowd upon the chair.

Dr. V. H. Jackson.—The doctor did not tell us what effect the sun shining upon the hand had,—how it acted on the iris.

Dr. Waters.—It acted on the iris so as to contract the pupil.

Tuesday, June 4, 1889.—Evening Session.

The evening session was devoted to a lantern exhibit by Dr. W. Xavier Sudduth, Philadelphia, illustrating "The Nature of Formative Cells."

DISCUSSION ON DR. SUDDUTH'S LANTERN EXHIBIT.

Dr. R. R. Andrews.—I am somewhat familiar with these different processes, as you know, and I must say that I never saw such a fine exhibition as the one given to-night. It is something we may remember all our days, and my only regret is that we have not the room full of physicians as well as dentists to appreciate this work. The coloring of the slides is another important feature: it rests the eye. Some of them are opaque and not clear, but with a little more careful work could no doubt be made quite as clear as the others. I think it is an improvement on our old method of preparing them. There is only one fault in it that I see, and that is, you have to take a section that covers the entire field.

In my appreciation of the work I feel much as an old gentleman did some years ago. His son asked his advice regarding some matter, when he answered, "I cannot advise you,—you are out of my reach." Dr. Sudduth is so far out of the reach of most of us that all we can say is a good Methodist "Amen."

Another point of interest and importance was the slide showing the vascular supply of the pericementum and of the pulp of the tooth. They are more intimately connected than we generally suppose. I had taken for granted, as I presume every one here has, that there was an arterial supply of considerable size that went into the foramen of the tooth,—some to the pericementum, and some to the pulp. From the showing, however, it seems that we have to proceed through a third party when we speak of inflammation of the pulp producing inflammation of the pericementum. I suppose the nervous supply is made up in a similar way; consequently, it is easier now to understand how the peculiar sensitiveness of the pericementum from the irritation of the pulp occurs, and why the irritation so quickly projects itself into the pericementum.

Dr. W. X. Sudduth.—I will add, that, if you will take ground sections of cat's teeth you will find out how many foramina these teeth have for vascular supply. I once had a case in practice where a central incisor was lost because of pericemental absorption, caused by an application of arsenic in the root-canal. After the root was prepared a crown was placed on and worn for two weeks, after which time the patient came back and had the root removed. I found considerable absorption of the root. I studied it carefully, and found a large foramen on the side of the root. It was through that foramen the arsenic had passed out and given rise to the trouble. In studying the anatomy of teeth, and of which we do not do enough, you will find many of these points brought out. It is important that students should be made to have a good knowledge of the anatomy of the teeth, for when they get in practice then they have little time for study.

Dr. C. T. Stockwell.—I wish to add my personal emphasis to everything that has been said in the way of appreciation of this lecture. There was one thing that constantly ran through my mind, and that was, "Function precedes organism." I wish to ask Dr. Sudduth if he has any criticism to make upon that scientific postulate. It seems to me that in a general sense it has an immense physiological meaning.

Dr. Sudduth.—If you mean that there is functional activity before there is organization of tissue I should say no, because all tissue is organized in one sense, but if you mean that functional activity exists before organs are developed, then I should answer yes, as many forms of life perform function without any regularly developed organs.

Dr. H. C. Merriam.—Some years ago I was interested in this

subject, and I got the impression very strongly that function, according to Spencer, was not only a determining cause of structure, but that function preceded it.

Dr. Sudduth.—Only in so far as it is revealed in hereditary tendencies. Each individual cell has in it the principle that will cause the development of organs or, in other words, organization.

Dr. Andrews.—In health or disease!

Dr. Sudduth.—According to the hereditary tendency of the pre-existing cell, or according to the peculiar influence, normal or pathological, which surrounds the developing tissue. Cells as well as individuals are subject to environment.

Wednesday, June 5, 1889.—Afternoon Session.

NEW PREPARATIONS.

Dr. W. X. Sudduth.—In my contact with the manufacturers, I am always on the look-out for new points of interest to the dental profession, and a year ago I presented to you an article, the silico-fluoride of sodium. It is non-poisonous, and can be given internally in doses of from five to ten grains three times a day without any injurious effect. That it prevents acid fermentation is also an established fact. Since I presented it, a year ago, it has been in constant use by the manufacturers of syrups for soda fountains, as it keeps them perfectly sweet. Lately, there has been a successful effort made to prepare them in tablet form, and, by the addition of the essential oils, to prepare a substitute for carbolic acid for use in the mouth. These now come in tablets, so that one dissolved in two ounces of water gives you the right strength to use as a stimulant antiseptic mouth-wash. This is a very convenient form for use. They can be procured from H. K. Mulford & Co., of Philadelphia.

PRESENTATION OF NEW INVENTIONS.

Dr. Horatio C. Merriam.—*The Ives Dental Syringe* (C. F. Ives, M.D.S., New York City).—The special feature in this is the improved packing. Instead of its being made like the ordinary syringes which makes it so difficult to use acids or any strong medicines, this has a piece of hard rubber with a feather edge, causing it to perfectly fit the barrel, which is carefully ground. Strong acids nor any of these medicines have any action upon it. The points are made of platinum and iridium, and the syringe is applicable for all purposes where a small syringe can be used.

Dr. W. H. Jones, Northampton, Mass.—New Forms of Excavators.

Dr. E. C. Blaisdell, Portsmouth, N. H.—Model of Instrument-Holder.—The feature is that when the drawer is drawn out the instruments, which cover a spring, are lifted into view. Upon shutting the drawer the spring is pressed down and the instruments are stored away again.

Dr. H. W. Gillett, Newport, R. I.—An Appliance for separating Teeth to hold Matrices, etc.—Also a bracket table to go on the S. S. White bracket, which is large enough for a majority of instruments used,—the excavators on one side, the gold-filling instruments on the other, which shows what can be done in the way of getting instruments into a compact and readily reached position. Another appliance is a little instrument that will not slip, but hold the teeth firmly in getting space. It consists of a small piece of piano wire, with a thread cut upon it. One end is flattened, and on the other end is a little nut. A small washer goes on the other side between the teeth. It is a matter of considerable convenience, and in some cases a very serviceable little separator. It is not applicable to cases where it is liable to slip against the gum. That may be modified by putting a little sand-paper washer under the nut.

Dr. Kirk A. Garland, South Boston, Mass.—Gas-Bracket for heating Cases before soldering.

Dr. Horatio C. Merriam.—New Bracket and Socket Handle.—The handles are not mine, but the invention of Drs. Perry and Darby. We formed a club and had some made. They are very strong, and have a long taper. You will see the security with which the instruments pass in. One turn tightens them. Many like this sort of an instrument, and they are also suitable for holding a mirror where you want a smooth handle.

The other is a new table, which I present to the profession. My object was to secure a table of plain and substantial workmanship, where the expense of manufacture was gotten rid of largely by avoiding all curves and ornamentation, and also in such a way that it gives the most space for the handling and working of instruments. It works from two sides. The drawers can be divided into halves,—one part being a receptacle for instruments used in preparing the cavity,—and by pushing it in and out of the way you have brought out on the other side the instruments necessary for filling or finishing the cavity. The covering of the table is of fancy paper,—shellaced. This can be kept clean by wiping it off with a sponge. The lower drawers are made for burrs, etc., but these can be improved so as to hold a larger quantity.

I am just making some studies upon a subject entirely neglected by the profession. As far as I learn, very few dentists have made a study of files for the profession for use in an anatomical way. My object is to find a file that I can use at the cervical wall, having a safe border which can be rolled back and forth without injuring the gum or rubber dam, and made of such a quality and workmanship that they will be serviceable instruments to us. These files are now rights and lefts, but I am having other forms made. These are professional files,—for the profession, and never will pass into the hands of combination dealers. They are placed outside where all can have an equal opportunity for enjoying their manufacture and sale. If you think the files I have given you are of service to the profession, and you can make use of them, and also the table, I shall be glad to have you accept them.

Dr. B. H. Teague, Aikin, S. C.—The *impression material* I have here is a compound I have used for the past ten years. The advantages are that it is fragile,—easily broken from the mouth, and of great benefit in taking impressions when overhanging teeth make it difficult to remove the ordinary material without destroying its shape. It is a material you can cast melted zinc into by making a proper mould. This can be done by encircling the impression with an iron ring, and pouring sufficient of the material around it to form a mould. It is a splendid material for soldering bridge-work. It is also very easy to detach the impression from the plaster cast. This impression was taken from a model I had made to construct a set of teeth upon. With the exception of one or two little breaks the impression is quite ready for another case. This material is patented.

This appliance—*an arm-rest*—has been in use for at least five years, and it has proved an infinite source of satisfaction to myself. Many times I have been tired out in operating, and I could find no help for it unless I put half of my body on the chair, or encircled the head of the patient, or had a head-rest that resembled a pulpit more than it did a dental chair; so I devised this fixture, which is swung from the ceiling, or wall, and by slipping my arm through it and resting my body upon it at times, it is a great source of relief.

Another thing, in operating for a great many sick people, as I have to in Aiken, I find that I get too near them, for their breath is often very offensive, and this enables me to get a little farther from the head of my patient, and at the same time hold my hand and arm steady. An additional advantage is you are able to make examinations of ladies' mouths without troubling them to take off

their hats. It is very easily arranged and you can slide it up and down, and when a person learns how to use it he will never be without it.

CLINICS.—ORAL SURGERY.

By Dr. G. L. Curtis, Syracuse, N. Y.—1. *Removal of Necrosed Bone due to Alveolar Abscess.*—The patient, a young man, had two superior central incisors pulpless and abscessed, and for whom a dentist had practised immediate root-filling. A fistula led to the apex of the right root, while the abscess of the left root was not indicated by an external opening, and, in consequence, was styled a "blind abscess." The opinion of the operator was that there existed a subperiosteal opening leading to the fistula over the right root.

The operation consisted in passing a rose-head burr, of suitable size, into the fistula, and following along its track into the excavation in the maxilla, about half an inch in size. The dead necrosed bone surrounding the cavity, including the sack attached to the end of the root, was burred away, after which the cavity was carefully syringed with tepid water, and all dislodged diseased tissue washed out. A few drops of aromatic sulphuric acid were then injected into the cavity with the view of destroying any diseased tissue remaining and stimulating the parts to healthy action.

The "blind abscess" was opened into directly over the end of the root by means of a spear-pointed drill, and the diseased part cut away and treated as in the case of the right central. A twenty-five-per-cent. solution of cocaine was employed, reducing the pain to a minimum. The operation was completed in ten minutes.

2. *Transplantation.*—Patient, a boy thirteen years old. Five days previous to clinic he fell, knocking out his superior left lateral incisor, which was lost.

The overlapping gum was dissected away, and a spiral knife used to cut out the granulations which filled the socket, which was afterwards cleansed and sterilized. The tooth, which was previously prepared and sterilized by Dr. Fillebrown, was then placed in position, and retained by means of clasps attached to approximating teeth. The gum surrounding the central incisors was much inflamed and the teeth quite loose and tender to pressure, consequent upon the original injury.

3. *Dentigerous Cyst.*—Patient, a man twenty-seven years of age. The lesion was due to the non-eruption of an inferior right cuspid. The case was mistaken and treated for alveolar abscess six weeks previous to the clinic, which operation consisted of simply lancing

the gum over the tumor. The tooth was found to be parallel with the jaw, deep in the substance of the bone, and around it the alveolar wall was necrosed to a considerable extent, the disease extending past the symphysis as far as the left cuspid, where an opening appeared in the gum. Between these points (the right second bicuspid to the left first bicuspid) the soft tissues were completely detached from the jaw, and, to a marked degree, hypertrophied. The patient experienced no pain from probing while the case was being demonstrated.

4. *Bridge-Work.*—Dr. Curtis demonstrated his removable bridge, the model being a bridge composed of the superior left second bicuspid and first molar, attached to the first bicuspid and second molar. The attachment was by an arm extending from the second molar and first bicuspid over which a sleeve, attached to the bridge, was slipped, and which locked the teeth together and prevented movement. The case is fastened by chloro-percha, and is not intended to be removed by the patient. It can be kept as clean as the full soldered bridge, and a marked advantage is, it can be applied to teeth in any position, and does not necessitate the cutting away of the teeth until the walls are parallel with each other. The bridge was well made, and admitted by all to be the most complete and practicable of its kind now in use.

Dr. Thos. Fillebrown demonstrated the quick preparation of proximal cavities without separation, using a left superior central for the purpose; also a superior method of attaching the rubber dam.

Dr. T. H. Parramore, Hampton, Va., demonstrated his method of capping with sterilized sponge, the case being an inferior right lateral incisor, so far exposed that the nerve could be plainly seen. The sponge was applied, and the cavity filled with oxyphosphate. After allowing six months to elapse the oxyphosphate, excepting a thin layer over capping, is to be removed and gold substituted.

Dr. S. C. G. Watkins, Montclair, N. J., gave a clinic, the operation being the filling of an inferior second molar with copper amalgam, using his trimmers and special instruments.

Dr. W. H. Pomeroy, Gloucester, Mass., filled a right superior molar, masticating surface, by a method similar to Herbst's, and using soft pellets worked by his patent mechanical engine mallet and smooth burnishers.

Dr. J. F. Adams, Worcester, Mass., demonstrated a method of filling and contouring by means of hand-mallet, using Williams's crystalline gold, the case being a superior left canine tooth.

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Dr. G. L. Chewing, Fredericksburg, Va., exhibited a model of fracture in three places of the inferior maxilla that had been successfully treated by him. The feature was, to take the impression while holding the parts in their normal position instead of securing the impression as the fracture exists, and then breaking the cast and adjusting to the proper relation.

Dr. C. C. Carroll, of the Carroll Aluminium Manufacturing Company, New York City, exhibited and demonstrated practical cases, artificial as well as crown- and bridge-work, made of aluminium, and also introduced a non-cohesive aluminium foil, new to the profession, for the purpose of filling teeth.

Dr. V. H. Jackson, New York City, exhibited a large number of models of cases of irregularities that had been successfully corrected by him by means of his various appliances for the purpose.

Dr. Joseph E. Waitt, Boston, Mass., demonstrated a method of making mouth-mirrors by which the cost was reduced to a minimum. It consisted of making three dies, each with a round hole, the first for shaping and the others for finishing the backing for the mirror, which backing is made of German silver and stamped into the die by a steel mandrel. The mirrors are cut by a diamond glass-cutting machine, and cemented into the backing. This method is not patented, and was exhibited for the benefit of the profession.

Dr. Waitt also exhibited a nitrous oxide light for use in making photo-micrographs and also as a light for stereopticons.

Mr. E. T. Wetzel, Basel, Switzerland, illustrated his manner of winding springs from piano wire for dental engines and other purposes.

Dr. S. S. Stowell, Pittsfield, Mass., demonstrated his method of making and setting crowns. The root is prepared in the usual way and the pin and cap of metal carefully measured and adjusted. The pin in the crown, if it be a Logan, is next cut off, with the exception of a small piece that is allowed to remain. The crown is next ground and fitted to the cap over the root, after which it is removed and gold melted into the undercut and around the pin, the metal being spatting down while in a state of fusion, which forces it to every part and produces a flat surface. The crown is again ground to fit the cap, and afterwards soldered to it, thus producing the most cleanly crown it is possible to make. It is cemented to the root in the usual way.

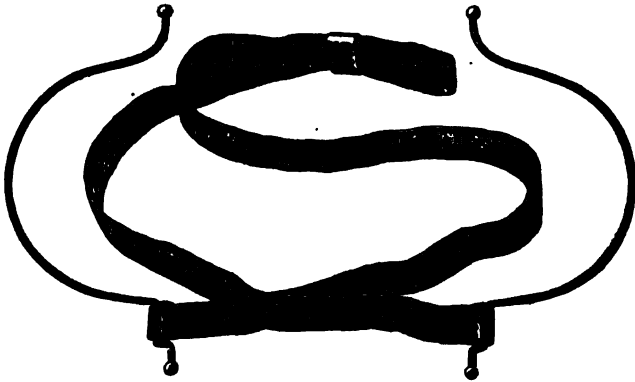
Dr. George A. Maxfield, Holyoke, Mass., showed an ingenious way of making hard rubber corundum disks. The corundum grit is incorporated with the rubber by being passed through a clothes-

wringer (the quantity of the mineral used influencing the coarseness of the disk), and, after being cut to the required diameter by a mandrel for the purpose, they are vulcanized, being strung on a fine wire, the diameter of the engine mandrel, and separated from each other by a small circular piece of tin, the whole encased in a clamp to press and hold them together. A great many can be made at one time, and at a cost that is not worth mentioning.

Dr. A. Ritter, Utica, N. Y., exhibited an engine standard of his own construction, the propelling power being furnished by a one-tenth horse-power motor. This was covered with a box which greatly reduced the noise, and was controlled by a switch that would start and stop it instantly. The cable could be detached at will and any other light mechanism run in its stead. The contrivance also included a fan and a corundum wheel for grinding, all running at the same time. It was an ingenious arrangement and invaluable in the many advantages it contained. The motor can be run by power from a street wire.

Dr. A. H. Brockway, Brooklyn, N. Y., demonstrated a method of applying the rubber dam.

Dr. W. S. Elliot, Hartford, Conn., exhibited a new *rubber-dam holder and separator*. Simplicity and efficiency are qualities always desirable in any instrument or appliance that is called into daily use. Among those that seem to be capable of improvement is the rubber-dam holder. The well-known Cogswell instrument has



served exceedingly well a general purpose; but to smooth out the wrinkles and folds of the dam something different was needed, and this need is abundantly supplied by a new device, of which the cut is a fair representation. The dam is first adjusted to the teeth, then

over each cheek, the folds are smoothed out, and while the spring of the holder is slightly compressed the rubber is made to stretch over the rings at the ends of the wires. Upon releasing the spring the rubber is caught and held firmly as the braid is passed over and adjusted behind the head.

The exhibition of goods by the dental dealers is deserving of special mention. An arrangement of this kind has a twofold and mutual benefit, the society being able to examine in one building the latest novelties and appliances of interest and use to the profession, while the dealers have the advantage of reaching a large number of men at one time. The present exhibit was fully in keeping with those of former years, and the executive committee are to be congratulated on the success that attended their carefully-laid plans and unremitting efforts.

NEW JERSEY STATE DENTAL SOCIETY.

DISCUSSION ON PROF. MAYR'S PAPER ENTITLED "THE WASTE PRODUCTS OF THE BODY."

Dr. Sudduth.—Mr. President, the paper that Professor Mayr has given us has been intensely interesting to me. But to some of you, perhaps, what has been said is more or less Greek. You may have listened to his figures and propositions without a clear understanding of what they indicate, or the exact meaning of the formulæ. It is impossible for a man to grasp in its entirety the subject as given here. Too much stress cannot be laid, however, upon the value of such work as this. Very often, in my practice, I come to a practical application of my scientific studies in the examination of the waste products of the body. We cannot too highly appreciate the rapid advance that has been made in the past few years in methods of making more accurate diagnoses. There is no longer any need of making guesses as to whether a man has a good or a weak digestion, or whether his nutrition is good or deficient, we can locate the very point of the body where the lack of assimilation occurs, make an accurate diagnosis, and administer medicines which will act directly. A chemist of Professor Mayr's standing, or any other man, whose life work has been in this direction, can take the waste products of the body, provided he knows the diet

of the patient, his age, the time of day, and the quantity of urine passed daily, and give you a very correct diagnosis of the disease from which the patient is suffering. It has been done time and again, and the result is as accurate as mathematics. The day of accurate diagnoses is here. You should consult specialists in this work. Dentists do not understand the influence and bearing that this character of work will have in giving them accurate bases upon which to argue and to build their theories. I cannot say too much regarding the benefit that will come to the dental profession from this line of investigation. I simply want to make this general application of the technical talk that has been given you. But bear away this thought, that the specialties of the specialists are being brought to the highest state of perfection, and you want to consult them in order to get a solid foundation on which to base your theories.

Dr. V. H. Jackson.—There is a practical bearing of this paper upon our work; and as dentists we should search for what can best assist us in our work. All dentists cannot make analyses of urine, or understand urine analyses. Dr. Sudduth has very nicely arranged it for us, in turning the subject over to specialists. I think it is proper that we should consult specialists. I spent three or four months in each of two different courses of study in order to prepare myself to understand this subject. It requires a long course of study; and we should not deceive ourselves into the belief that we can master the subject like our friend, Professor Mayr. My suggestion would be to try to get the most benefit we can out of the subject by dealing with the practical side of it; to try phosphate feeding, and learn in what forms the phosphates are best assimilated. Intricate cases, where there is pyorrhœa, I think we should turn over to the specialist and let him determine it for us. I would like Dr. Mayr's suggestions as to the most practical method of feeding patients that are deficient in phosphates, and how we can promote the hardening of soft tooth-tissue. I have great faith in phosphate feeding.

Dr. Faught.—The question resolves itself down to the control of the whole nervous system, as one of the ways to build up the tissues, as much as to administer the proper assimilable material. If we can reduce the waste, we take a great step towards the building up of the tissues. The elimination of urea shows a breaking down of the nervous forces, and the tissues and the phosphates bear their portion of the loss. That being the case, dentists must direct their attention to means of controlling their patients' mental

forces. By controlling the nervous forces you will control the loss of urea, and with it the elimination of the phosphates.

Dr. Littig.—What portion of the wheat kernel is assimilable in the body,—the phosphite or the phosphate?

Prof. Mayr.—I think that where an albuminous substance is digested and taken up by the system, the phosphate in combination with it is also digested and taken up; and phosphoric acid excreted. If we could label the food that goes into the body, we would find that the phosphoric acid that comes out is not the same that went in. It is an old one, perhaps weeks old. The phosphate that is excreted comes from the tissues that have been eaten up, and not necessarily from the food that has recently been digested. The phosphoric acid excreted is not much influenced by a meal that is taken; it depends upon the urea. By examining the urea excreted by a man I can get an exact measurement of his mental energy; I can tell how much a man thinks in the next two hours after eating.

The excretion of urea at different times, according to the activity or inactivity of the mind, is very interesting. At midnight it reaches the lowest point. About three o'clock the subject begins to dream, and the excretion of urea begins to rise. Between three and five o'clock is the time for dreaming; dreams cause thought, and thought is expressed in the urea. Then the person falls into a quiet slumber from five to six o'clock, and the urea falls. From nine to ten o'clock there is hard work, and at twelve o'clock (noon), the urea is tremendously high. It has been formed during the period of work. *The kidneys do not immediately excrete it, but two or three hours after.* At twelve o'clock the man has his dinner. That does not require much thought; and so the quantity of urea found falls off during the dinner hour. Two hours are taken for digestion, and there is not much change. From two to five there is generally hard work; and at six o'clock the urea rises again, and keeps up until seven or eight o'clock. At six o'clock comes supper; after which there is sometimes a good deal of work done, sometimes there is not, but the urea excreted will mark the energy expended.

The phosphoric acid excreted goes exactly parallel with the urea; showing that the phosphoric acid excreted is precisely that acid which goes with the tissue from which the urea is made. I think that is most conclusive proof that it is not the phosphoric acid put into the system in the food. If it were, it would be high after breakfast and high after dinner, which is not the case. The phosphoric acid that we excrete is made from the tissue. The urea

is made from the brain, and is excreted in the kidneys. The uric acid is entirely different. It has nothing to do with the urea; but has a great deal to do with the digestive process. The urea is lowest after every meal; the uric acid is highest after dinner and after breakfast; three or four hours after a meal it shows the highest. The salt, on the other hand, which is purely a waste product, shows the influence of the meals in a most striking manner. In it you can see exactly the speed of digestion. The excretion of salt shows that it comes from the meals taken, and does not necessarily come from the tissues of the body.

There are many other constituents of the urine that I have omitted. I have made thousands of careful examinations, and given this subject much study. I think there is conclusive proof that the phosphoric acid we excrete is not the particular one we take into the system in our food. The phosphoric acid which we take in as phosphate has to be worked over, and the phosphate excreted is from the tissue burned up.

Dr. Sudduth.—It was stated, in the discussion on the treatment of the teeth during pregnancy, that pregnant women crave lime and chalk; and the question was raised whether it was the phosphate or the phosphite that the system demanded and assimilated.

Prof. Mayr.—I should say the phosphate; because the phosphite, as a distinct chemical compound, is not found in the body.

Dr. Rhein.—In connection with Dr. Sudduth's question; I would like to ask Professor Mayr's opinion about the action of a preparation that has been very widely recommended,—that is, in regard to the various compounds of hypophosphites mixed with lime and other ingredients. I have heard it claimed that the phosphates and lime salts were assimilated when taken in that way.

Prof. Mayr.—I have made experiments on that subject; and there seems to be proof that the phosphates, etc., are excreted just as they are taken in. By analysis you can recover everything again. The hypophosphites appear mostly as phosphates, but not altogether. A certain amount seems to pass through the alimentary canal as hypophosphites; but they do not seem to be assimilated. When five grains of phosphate are taken five grains will invariably be excreted in excess of the ordinary proportion. The administration of hypophosphites seems to have a good influence in certain cases of defective digestion. They act merely as a tonic, such as the subnitrate of bismuth.

Dr. Meeker.—Is the preparation called "Horsford's Acid Phosphates" excreted in the same form?

Prof. Mayr.—It is excreted, as a rule, in the form of phosphoric acid. It is a mixture of pyro- and ortho-phosphoric acids.

Dr. Meeker.—Is not a portion assimilated?

Prof. Mayr.—In my opinion it is not; not the least particle of it.

Dr. Thayer.—Did you ever test the urine of persons whose bread foods are confined entirely to the products of unbolted wheat flour and compare the results with those obtained in cases where the bread food had been made of fine flour only?

Prof. Mayr.—Not sufficiently to form any definite conclusions. I do not always have the right subjects and circumstances for such tests. I have made tests in cases of vegetarians, those who avoid all kinds of meat, and the ratio is the same. It makes no difference whether the person is a beef-eater or a bean-eater; the results are the same.

To make such investigations of real value, the total urine voided in a day should be mixed and the examination made from that. The weight of a person does not bear any relation to the quantity of urea excreted. A short person with an active brain burns up as much or more than a tall and sluggish person. I have made careful examinations in persons where violent exercise had been taken; and, on the other hand, of persons who did not exercise much but thought a great deal; and I found that the man who thought beat the athlete in the production of urea by long odds, although he was of lighter weight. The athlete evidently used up the fatty constituents more; the other one did not assimilate the same amount of fat, and did not care for it, but he burned the saccharine constituents and the nitrogeneous tissues.

Dr. Stockton.—Where there is waste of the tooth-structure from some cause, can that be remedied by taking a particular kind of food to supply that waste?

Prof. Mayr.—Certainly. My opinion is that it can: but the food has to be prepared in a form in which it is naturally and normally taken. One person won't eat bread; another person won't have meat; or, if they take it, the digestive apparatus don't work it right. Sometimes there is a defect in the stomach, sometimes in the absorbent qualities; very often the food is not presented in palatable form owing to bad cooking; and sometimes they don't like, or will not appropriate, a particular article of food. I think that bread made of the entire wheat kernel is by far the best kind for supplying the phosphates. There is a good amount of indigestible matter in it; but the intestinal tract requires to be filled up; therefore the waste matter is necessary. We do not want to live on the

most concentrated food ; we are not built on that plan. The twenty-two feet of intestine has to be filled up. Pig's feet, which contain a great deal of gristle, are sometimes an acceptable food and sometimes not ; veal, in various forms, is also a very good food. Veal contains a large amount of phosphates and formative tissue. I think children are not usually given enough veal. It is considered a sort of unripe meat ; but children like unripe things ; they are unripe themselves, and unripe things are sometimes good for them.

Dr. Littig.—It was stated that the urea was made by the brain and excreted by the kidneys. Is it not elaborated in the kidneys ; not excreted there ?

Prof. Mayr.—My conclusion would be contrary to that : unless we suppose the kidneys were closely occupied with the thinking process, and that the brain is only an appendage of the kidneys. Urea circulates in the blood ; and you purchase it in the stores as extract of beef, which is concentrated urine. It contains some salts that are very valuable, as creatine and creatinine ; both are found in the muscular tissue which we eat. It is excreted, apparently, in the same quantity as taken in. It has a very pleasant taste, and stimulates digestion. The process of carrying the urine and its salts and filtering it through the epithelia of the kidneys is a very complicated one. I do not think the kidneys manufacture anything, in any important sense. They may contribute towards the formation of uric acid, or some of the less known constituents of the urine.

Dr. Rhein.—Judging from the scale you have on the black-board, is it not a good, practical conclusion to come to, that where examinations are made for the purpose of determining the existence of pathological conditions, it is always necessary to make several examinations of the urine excreted at different times ?

Prof. Mayr.—Certainly. This scale was obtained by the examination of probably thirty specimens a day for several weeks.

Dr. Rhein.—You would not make a diagnosis in any individual case from a single specimen ?

Prof. Mayr.—Certain pathological products occur at all times, and a general diagnosis may be obtained from random samples, but nice work could not be so done. In the case of a man who sleeps during the day and works during the night, the result would be totally reversed. I could tell his work if I had a sample of his urine and the time when taken.

Dr. Rhein.—I mean in pathological conditions ; would it not be preferable not to depend on a single secretion, at a single hour ?

Prof. Mayr.—That is a point on which I have had to fight a

good deal. Very often physicians send me specimens of urine without saying when it was voided, or how old the specimens were or anything. Without that information it is very difficult to form an intelligent opinion. In the morning the urine shows best the excretion of urea and salts and such things; but it is not conclusive in cases of diabetes and Bright's disease. In the evening, and up to midnight the urine will best show those disturbances. In these hours the disease is aggravated. Of course, an examination of the urine voided every hour would lead to more reliable conclusions.

Dr. Rhein.—My plan is to take the morning urine, the mid-day, and just before retiring, and make a comparison of the three specimens. I would like to know whether that is sufficient to form correct conclusions regarding pathological conditions?

Prof. Mayr.—I think that would give a very fair idea.

Dr. Faught.—Mr. President, I would like to state a case in which I am much interested, and which has direct reference to practitioners of dentistry. A dentist who worked very hard at his profession during the day, and mentally at night, for a number of years, passed phosphates in large quantities through the urine. He did not seem to suffer physically in any way from it, but increased in weight. At that time an examination of his mouth revealed no salivary deposits. After quite a long period the secretion or elimination of phosphate through the urine ceased; and then he immediately suffered from severe inflammation of the kidneys, particularly on the left side. I thought that the condition might be due to the vascular supply on the left side being different from that on the right side. He also suffered immediately with hemorrhoids and varicocele. Probably these conditions were aggravated by his work at the chair. Albumen was found in the urine in appreciable quantities. This condition continued for a period of three to five weeks. At the end of that time the albumen disappeared from the urine, under treatment; and immediately upon his being pronounced well he began to throw off phosphates in large quantities again. During the five or six weeks when he was suffering from these troubles there was in his mouth a very great deposit of calculus.

Prof. Mayr.—That is a very interesting case. He "gained weight." But what is weight in our bodies? The greater part of it is nothing but water. You often find that we increase in weight while we lose strength. We pump water into our systems, but it does not give us strength. Gain in weight is not necessarily a gain in strength. In regard to the excretion of phosphates in the case

mentioned, I would ask what the figures were as to the phosphates obtained?

Dr. Faught.—I have no statistics in the case.

Prof. Mayr.—We have first to inquire whether it was really so. The description of the case would seem to be indicative of a clogging up, or diphtheria, of the tubes of the kidneys. It is quite correct to say diphtheria of the kidneys. I have a case where the kidneys refused to work; and upon treatment with turpentine there came violent spasms; and I found in the first urine voided a perfect tree of algæ-like threads (plants), showing the ramifications of the tubuli of the kidneys. It was a fungus which had grown up in the tubuli of the kidney. The action of the turpentine enabled the kidney to throw it off, and the patient was cured. I think the case which the gentleman mentioned here might have been a case of that kind.

Dr. Peirce.—Yesterday we had very beautifully shown the effect of over-work upon the teeth of young misses in the public schools, and Professor Mayr has brought out a similar thought in regard to mental work generally. I would like to have him speak more at length in connection with those points.

Prof. Mayr.—I do not think you will fail to agree with me. The more mental work, the more urea is produced. Young misses occasionally over-work, but a boy seldom over-works himself. You have this state of affairs: people while thinking are continually burning up their tissues for the purpose of producing urea and phosphoric acid. They excrete the phosphoric acid set free from their tissues. They produce too much urea, and are therefore compelled to excrete too much phosphoric acid; because the proportion of one hundred to eight is maintained; therefore, as they cannot think, and especially worry, without producing much urea, they have to excrete a corresponding amount—the constant ratio of one hundred to eight—of phosphoric acid. For every foot-pound of thought you will have a given amount of urea excreted; therefore, as long as you keep the brain at work and make it perform so many foot-pounds of thought, you will have excreted so many grains of urea. One thing is to control fretfulness. A fretfulness that produces activity, but no actual results, causes a loss of just so many grains of urea. Another wearing cause may be intestinal parasites; or the limbs may be moving around uneasily, caused by a tendency to epilepsy or St. Vitus's dance. A peculiar fretfulness of the nerves produces work that is not work, but which turns out urea just the same.

Dr. Jackson.—Are we to understand the doctor to imply that phosphate feeding is not of advantage to the patient?

Prof. Mayr.—My opinion would be strongly against feeding phosphates pure,—that is, not in combination with the albuminoids, such as are accepted by the body. The phosphate in wheat is actually in such chemical combination. We have not been able to produce that combination chemically. We have been able to dissolve it. Take the phosphates away from the albuminous substance and it becomes an entirely different compound. It is no longer soluble in water. Dogs have been starved by feeding them on the cakes from which the extract of meat is obtained. Those cakes were like so much rubber, and the dogs starved on it.

ODONTOLOGICAL SOCIETY OF PENNSYLVANIA.

THE Odontological Society of Pennsylvania held its regular monthly meeting in Justi's Hall, November 2, 1889. A paper was read by Dr. Ernest Laplace on fermentation.

DISCUSSION ON PROFESSOR LAPLACE'S PAPER.

Dr. Sudduth.—I would like Dr. Laplace to answer a few questions which will bring out points which may not be as clear in the minds of some as they should be. First, I would like to know what effect the "alteration of the soil" has to prevent the growth of these germs?

Dr. Laplace.—I can only say that it is a fact which has been observed from the time Jenner inoculated cow-pox against small-pox; but just why this should render the soil unfit for their growth I am unable to say.

Dr. Sudduth.—Might there not be a slight change in the albuminoid substances of the body?

Dr. Head.—Might not the weaker microbe act on the stronger as a restraint?

Dr. Laplace.—As an illustration, suppose two young men, brothers, both in health, are exposed to the same infection. One from exposure contracts pneumonia. After the one has recovered from the pneumonia they are again exposed, this time, however, to the germs of tuberculosis. The germs which before fell harmless on the soil of each of their lungs now find suitable soil in the lungs of

the one who has had pneumonia, and take root and grow, while they are still harmless to the one who has never had pneumonia.

I could entertain you a good while with many of the experiments of Pasteur. But as this one illustrates the point in question I will relate it. Pasteur was told that a chicken could not be inoculated with anthrax or splenic fever. In experimenting with the cultures of the anthrax bacillus he found that, when grown, at a temperature of 42° C., these germs were not virulent; but when cultivated at 37° C., they were highly virulent to its growth. He then took the temperature of a chicken and found it to be 42°. He then went down to the Academy of Science, and took his chicken and a basin of ice-water. He plunged the chicken into the ice-water until its temperature was reduced to 37°, and then inoculated it. In twenty-four hours the chicken was dead from anthrax.

Dr. Kirk.—Suppose you have treated a tooth thus theoretically antiseptically, and some time—six months or more afterwards—there develops in that tooth an alveolar abscess, then would you say that there had been left there some germs, or, that the germs had since been introduced?

Dr. Laplace.—We know that germs will travel through mucous membrane through the stomata or little mouths of blood-vessels. They may get there in this way or perhaps be carried direct by the blood-vessels, in some diseased state of the blood, such as erysipelas or pyæmia.

Dr. Faught.—Why does it select this particular tooth and not another?

Dr. Laplace.—I can only give you the reason which I gave before, that of lowered vitality. To have a correct idea of the process, one must take into consideration the histology of the part. When a part of the body is irritated by the germs, more blood is sent to that part, and the white blood-corpuscles pass through the vessel walls and attack the microbes, and, if in sufficient numbers and strength, destroy them, and the part regains its health. If, however, the germs are in too great numbers, they will gain the upper hand in the deadly strife, and disease will follow. A Russian pathologist, in looking at this conflict, discovered the microbe inside the white blood-corpuscle, and from this fact named them *phagocytes*,—the Greek to eat. When a great number of white blood-corpuscles have been thus destroyed by the action of a local irritant, chemical or a living micro-organism, and are retained in that special locality in a certain amount of fluid, we have the pathological product commonly known as *pus*.

Dr. Sudduth.—Will the doctor give us some idea of the best antiseptic, and how used?

Dr. Laplace.—The first antiseptic used was carbolic acid. This was discarded in favor of the bichloride of mercury, which Koch, in 1882, found to be destructive to the life of the anthrax bacillus in the proportion of 1-1000,—that is, in a watery solution of this strength the germs would be destroyed. But when the mercury was brought in contact with the albumen of the tissue of the bodies, there was thrown down a heavy precipitate of the albuminate of mercury, which rendered the solution inactive. When in Koch's laboratory, taking a subject for special investigation, I undertook to find some way to prevent this deposit and keep the solution active. I took this deposit and planted therein the germs of suppuration, and they grew and thrived, thus proving the uselessness of it where this deposit was. After a long series of experiments, I found that by adding five per cent. of acid to the solution, I had not only solved the question of preventing the deposit, but had rendered the solution much stronger and efficacious.

Dr. James Truman.—From the time when Senwenhoeck, in 1680, found that yeast consisted of globular particles to the period when Schwan and Latour independently proved them to be vegetable cells, was a period of less activity than that which followed; yet it was the commencement of that greater work that has been so prolific in results in more recent times.

The views of Schwan naturally led to opposition, and Leibig's molecular action theory held its place as the most prominent, and, at the same time, most difficult theory to combat. When Schroeder proved that he could filter out the spores from the air, another advance was made, and rendered possible other steps in the investigation of this subject. Bastian aided materially in this labor; but his spontaneous generation theory has not found a place, and he failed to sustain the views of Leibig that the molecular movements were the cause of fermentation by adding on his own, that they actually became vital. From this period to that more recent, when Koch proved the existence of the tubercle bacillus, there has been continued progress, and the germ theory of disease has ceased to be a speculation. The theories brought forward from time to time, to combat it have fallen into deserved oblivion.

The address and the remarks of Professor Laplace this evening abundantly prove the thoroughness with which the whole subject of fermentation has been treated by those to whom we are most indebted for its elucidation. To us, as dentists, this subject appeals

with daily increasing force. We are constantly brought in contact with conditions that must be intelligently met, and it is only by a satisfactory knowledge of fermentation and antisepsis that these can be properly met. To Professor Miller we owe a debt of gratitude that he has, unquestionably, solved the problem of dental caries, and his labors in investigating the ferments of the oral cavity have shown the necessity for an equal degree of thoroughness in our operations with that which made Lister's name famous in those of general surgery.

When it is fully recognized that the mouth is, without doubt, the culture place for many pathogenic forms, and that many of the zymotic diseases have their genesis therein, more attention will be paid to its condition by general practitioners than is given at present. When the dentists of to-day appreciate the possibilities of fermentation, they will govern all their operations in the mouth with a care as to possible results from infection. The time is certainly not far off when prophylactic measures will be studied with special reference to the mouth and its secretions. Efforts will be made to destroy these germs as they enter this vestibule of the entire organism, and prevent them from beginning their insidious and poisonous work. That this is to be the labor of the future I have no doubt. That it will, in degree, stamp out many forms of disease I am equally well satisfied, and the time will, in my opinion, most assuredly come when we will know less of the destructive work of the tubercle bacillus than we now do, but this will be accomplished in advance of pathological conditions.

Dr. Sudduth.—I would say for the benefit of those who are not aware of the fact that tablets of the acid sublimate, put up after Dr. Laplace's formula, are to be had at Mulford's drug store.

Editorial.

PATENT-OFFICE EXAMINERS.

VERY few persons have any idea of the amount of business done in the Patent-Office in Washington or the technical character of the work necessary to be accomplished in the examination of applications for patents.

Every facility has been provided by the government to assist the examiners in the performance of their duties. Well-equipped laboratories have been placed at their disposal. This is especially noticeable in the chemical and electrical departments. Many of the men are experts in their department. And they must needs be; otherwise the country would be flooded with duplicate patents and the courts overcrowded with "patent" litigation. The examiners are not required to possess a knowledge of outside matters, nor are they expected to know whether an article has been long in use; but, if possessed of such knowledge, they would be capable of rendering much more efficient service to the government. Such knowledge is not always needed, but at times would be most valuable indeed. Professor G. D. Seeley, of the electrical department, is said to be an electrical expert who is thoroughly posted not only in the history of electricity but in its science, and is engaged almost daily in the laboratory testing the practicability of the many inventions that come before him, as well as deciding upon their claims for novelty, etc.

Dr. Antisell is an expert chemist and fully qualified to pass upon inventions that come in his line. Mr. Pierce is also said to be an expert machinist, and especially well posted in the complicated machinery of sewing-machines. And so we might go on through the whole list of examiners and still leave a department which, in our judgment, is not filled as it should be. We refer to dental patents, which form a peculiar class, and should be under the jurisdiction of a competent dentist who is fully conversant with the mechanical features of dentistry. Such a need does not exist in regard to medicine, for there is, strictly speaking, no such thing as a medical patent; but in dentistry, owing to the mechanical nature

of its practice and to the fact that the patent system has been fostered by certain dealers and, to a great extent, by the dental press, there is a distinct and large class of patents which have been designated as "dental patents." These affect such a large class of individuals that it seems to us that an examiner should be chosen from the dental ranks who would look out for the large interests at stake in a way that a non-professional man, no matter how competent and faithful, could not do,—some retired practitioner of dentistry, who, through long practice and acquaintance with practical dentistry, would be specially fitted for the position, and no doubt could be readily found to fill the place. With a competent dental examiner in the Patent-Office, it would be impossible for any more patents to be issued upon *methods of practice* which have been in vogue from time immemorial almost,—as some of those which have been issued and passed into the hands of the International Tooth-Crown Company, which, besides the patent on the method of making the so-called "Low bridge," that is still pending in the courts, have patents—according to Dr. Crouse—on "twelve or fifteen different forms of crowns," and also on "a method of preparing roots for crowning," "for cutting off teeth," "for driving out a pulp," "for filling the end of a root," "for freezing a tooth so as to make it insensible," "for cementing a pin or post into a root," "for filling a tooth with some fibrous material," etc.

Not only would a dental examiner prevent the issue of such patents, but, being one of us, he would look out that abuses in other directions were not foisted upon us, as has been done recently in two instances. The first of these is so well described by "Nemo" in the December number of the *Ohio Journal of Dental Science* that we cannot do better than quote from his article. The case is one where a patent had been granted on the *form* of the gum for artificial teeth. In summing up the law governing the issuing of patents, he says,—

"The plain language of the patent laws of the United States is that the claimant should be the first and original inventor of the thing claimed, also that it should be the result of 'effort, industry, or genius' in the claimant. When these conditions are complied with, no one can reasonably object to the granting of a patent, and the purpose of the law, 'to promote the progress of science and the useful arts,' will be attained.

"Keeping the distinction plainly in view between the purpose of the people in granting patents and that of the inventor in soliciting the grant, we shall see that certain considerations ought not to influence the decisions of the Patent-Office.

"First, the fact that the patents granted by the commissioner may be re-

vised by the courts should not be allowed to influence his decisions. Often, apparently, this is not the case.

"Then, again, too often it seems plain that well-paid solicitors have succeeded in worrying the officials into favorable reports on the most trivial applications for inventions either worthless or requiring a great stretch of the imagination to find anything new or any evidence of 'effort, industry, or genius' in them.

"Such decisions in the Patent-Office afford unscrupulous men an opportunity to hinder the business of other manufacturers or extort royalties to which they have no moral right, although they may legally claim them. . . .

"The patent under consideration, it will be observed, is for a *form* of the artificial gum as connected with artificial teeth.

"Now, the parties who obtained this patent claim to make the most perfect imitations of the natural teeth and gums, and therefore the claim in their patent is for something which is only a copy of a well-known natural form, and not an invention the result of an expenditure of 'effort, industry, or genius,' and therefore, under the law, clearly not patentable.

"Again, suppose the form were patentable, the law requires that the claimant shall be the first and original inventor to entitle him to a patent."

Which was not the case in this instance, as the writer proceeds conclusively to show that Mr. Justi had teeth of similar construction on exhibition at the Centennial Exhibition, and on which he had not asked for any patent, because they were a copy of the natural gums, and therefore not entitled to being patented.

There is another objectionable feature to this patent, and that is that it was allowed to pend from April 6, 1884, till October 15, 1885, when it was finally issued. By allowing the application to lie in the Patent-Office the patentee gained five years additional time in the monopoly, which was finally granted for fourteen years, making nineteen years.

Another similar flagrant case is to be found in the patent granted for an improvement in the foot-rest on the Morrison chair, the application for which was made January 5, 1875, and allowed to lie until August 30, 1887, when it was finally pushed through in time to prevent the free manufacture of said chair. By this means of procedure the owners of the patent are granted the monopoly of the manufacture of the Morrison chair for another seventeen years, which is acquired by a patent applied for over twelve years ago; making a total of over twenty-nine years, a thing that was never intended by the framers of the laws governing the issuing of patents. Had we had a dental examiner in the Patent-Office, the matter would have been brought to light and the remedy applied. Let us have a representative of the dental profession in the Patent-Office whose duty it shall be to look out for the interests of the body he

represents, and thus prevent the issuing of patents on articles which possess no real value, are devoid of novelty, are copies of nature, thereby presenting no *new* features, or are based upon methods of procedure which have long been in use.

THAT "MEMORIAL MEETING."

THE meeting proposed by Dr. Allport, and first published by this JOURNAL in an editorial on the American Dental Association, in the October number, for an anniversary meeting in that society upon the occasion of the World's Fair, in 1892, seems to meet with favor in several quarters. The December *Cosmos* has a comprehensive editorial on the subject, in which the position taken by us throughout the discussion on the Second International Dental Congress is thoroughly sustained. It says,—

"It seems, therefore, eminently fit and proper that the American Dental Association should assume the direction of a dental branch of the celebration of the birthday of America, and we earnestly hope that the youngest of the professions and one by birthright distinctively American may look with confidence to the American Dental Association for an arrangement providing for a fitting celebration in 1892."

That is what we have claimed from the first,—that, in the event of a dental congress, it should be under the supervision of the American Dental Association, and that any and all benefits to be derived from such a meeting should accrue to the already existing organizations in America. It matters not whether the World's Fair be held in New York, Chicago, or Washington, all true lovers of our profession should join heartily and help make the movement a success. The matter should be fully discussed before the next meeting of the association, and some tangible plan be ready for presentation at that time, so that committees could be appointed in order to insure arrangements that shall be in keeping with the event to be celebrated.

It has been remarked that the title "Memorial Meeting" is hardly appropriate, and it has even been hinted that the name suggests a death in the family, and that it is necessary to hold a memorial meeting for the American Dental Association. Such is not the case. It is not a memorial meeting *for* the American Dental Association but *in* the American Dental Association for the late Second International Dental Congress, which suffered an untimely death at Saratoga last summer.

Foreign Correspondence.

TO THE EDITOR:

Though this Hawaiian kingdom is but a dot in the great Pacific Ocean, there are gathered into it perhaps a greater variety of nationalities than exist in any other land. From the Swede of the North to the inhabitant of the Atolls of the South Seas—from the Indians of the East to the dwellers in the land of Sinim, all gather upon these sunny shores, and come, more or less, under our observation and care. By the near roar of the breakers upon our encircling reefs, we are thrown into close relations and learn much of each other's ways and character. It has occurred to me that some observations, made during my twenty years' practice among this people, might not be without interest to your readers.

The Hawaiians of the past had good teeth, but by no means the perfect teeth that writers have so often told us were the especial boon of all savage races. Fortunately for the student in such matters, the ancient Hawaiians were often buried in the almost inaccessible lava caves with which some parts of the country abound, or in the shifting sands of the sea-shore, which, sooner or later, leave the whitened bones exposed to the observer. In the hundreds of crania which I have examined, in which the superior and inferior maxillaries were together, I have found few cases where there were not greater or less effects of dental caries, not infrequently salivary calculi, and, in a few instances, unmistakable evidences of pyorrhœa alveolaris. In one cranium in my possession there were eight alveolar abscesses in the superior maxillary at the time of death. Though, on the whole, the teeth of these ancient people, as well as those of the present generation, are very regular, the inferior third molar seems to have been a frequent cause of great misery. I have one specimen in which this crowded *dens sapientiæ* has retaliated by causing complete ankylosis of the jaw. The second molar was forced out, evidently to give space for the individual to be fed.

The Hawaiians in middle life to-day have better teeth than their European neighbors; but their children have very little advantage over their white playmates. I attribute this rapid deterioration to the fact that while their parents ate much the same food that

their fathers used before civilization came to them, the children, using the less simple foreign diet, with little personal attention to their teeth, are more subject to dental diseases.

The Chinese (large numbers of whom, of the better classes, have been under my care) are quite similar to the Hawaiians in the soundness and strength of their teeth, but from a different cause. These people, evidently, from ages, have taken great care of their teeth, as far as personal attention could go. The majority of those whom I have met who would be called the upper class are afflicted with *pyorrhæa alveolaris*, while the laborers are no more subject to it than other nationalities. I attribute this in a great measure to the free use of their tooth-powder, which consists of finely powdered pumice or silicon. This in time separates the gum from the teeth, and paves the way for more serious trouble. Irregularities, especially in the third molars, are common among all classes.

I have examined with great interest the teeth of the South Sea Islanders, especially those coming from the low islands, where little but cocoanuts and bread-fruit will grow. So far as my observation extends, they have large teeth, but of very poor quality. The teeth have a yellow, opaque look, with soft enamel, which readily wears down and breaks off. The dentine has that peculiar tallowy cut well known to the dentist as not hopeful for long retaining the filling. The secretions of the mouth seem normal, so that these teeth, indifferent as they are, remain to do good service, giving them little trouble, except from periostitis. The teeth of these people have not been influenced by civilization.

We often hear the teeth of the American people represented as more frail than those of their cousins across the Atlantic. But it is my observation from a cosmopolitan practice that they are not inferior to any, and are superior to several of the European nationalities. One reason why this sentiment has prevailed among travellers may be that Americans take more care of their teeth, and show their care both by their conversation and the evident appearance of the mouth.

J. M. WHITNEY.

HONOLULU.

TO THE EDITOR:

The letter of Dr. Darley, in the October number of the *INTERNATIONAL DENTAL JOURNAL*, induces me to give the conclusions I have arrived at from an experimental use of Watt's crystal gold. When I say an experimental use, I mean that I have used up

about four packages of it, that fillings of it were packed in various ways, and that a considerable number were made out of the mouth in cavities cut in bone or ivory. The fillings that I made out of the mouth were treated for cohesion and toughness by cutting with excavators, for surface hardness by firm burnishing, and for adaptation by removing the filling intact and examining it with a magnifying glass. I found that it was possible to arrive at perfect adaptation if very small pieces were used and very great care was taken: a better adaptation, in fact, than I was able to obtain by the ordinary methods of working foil. Burnishing pellets of either cohesive or non-cohesive foil being the only means by which I could get as good results. The only apparent difference being that the "burnished-to-place" gold was bright and polished where it was in contact with the cavity walls, and the crystal gold was quite dull. To obtain this good adaptation with crystal gold requires more time and care than the average practitioner can give. Unless this minute care is taken, and minute pieces used, it is, I believe, inferior in this respect to foil. The hardness of the filling is greater than those ordinarily made of foil, but the cohesion and toughness of the filling is decidedly inferior. To prove this, make two fillings, one of crystal gold and one of foil. Use relatively small pieces of each. Then try to dig out the gold with a moderately strong excavator. Don't just pick at the surface, but press the sharp blade in with force at an angle of forty-five degrees and try to lever up the layers of gold. The difference is at once apparent. These experiments and others lead me to the conclusion that it is an easy material with which to make inferior fillings in a short time; but that, in order to do superior work, it necessitates more care and time than foil; and that, no matter what care is taken, the filling is not so absolutely cohesive as if foil were used. The cohesion may, however, be sufficient for all practical purposes. The instruments I used were very finely serrated.

WM. C. GRAYSTON, L.D.S.

SCARBOROUGH, ENGLAND.

Domestic Correspondence.

TO THE EDITOR:

American Academy of Dental Science.—The twenty-second annual meeting of the American Academy of Dental Science was held at Young's Hotel, in Boston, on Wednesday, November 13, 1889. There was a very good attendance of members present, and the chair was occupied by the president, Dr. Cecil P. Wilson, of Boston. He welcomed the members to the hospitalities of this twenty-second anniversary, and spoke of the pleasures and benefits derived from gatherings like this, of earnest professional gentlemen united together for the public good and for the promotion of the best interests of their chosen profession, and he congratulated them upon the prosperity and progress of the Academy. After listening to the annual reports, and other routine business having been transacted, the following officers were elected for the ensuing year: President, Dr. F. N. Seabury, of Providence, R. I.; Vice-President, Dr. C. A. Brackett, of Newport, R. I.; Corresponding Secretary, Dr. E. N. Harris, of Boston; Recording Secretary, Dr. V. C. Pond, of Boston; Treasurer, Dr. E. C. Briggs, of Boston; Librarian, Dr. Charles Wilson, of Boston.

Executive Committee.—Dr. E. H. Smith, of Boston; Dr. Thomas Fillebrown, of Portland, Maine; and Dr. F. E. Banfield, of Boston.

Dr. W. N. Potter, of Boston, was appointed editor of the Academy proceedings for the ensuing year. Dr. Harris, corresponding secretary of the Academy from 1867 to 1877, by urgent solicitation of the members, consented to accept that position again.

Resolutions of respect to the memory of Dr. F. Searle, of Springfield; Dr. S. P. Stearns, of Boston; and Dr. J. W. Smith, of Newport, members of the Academy who departed this life during the past year, were adopted by a rising vote.

The annual address was delivered by Dr. J. T. Codman, of Boston, taking for his subject "Retrospect and Prospect." He spoke of the conditions of life under which professional men lived seventy-five years ago, and gave a very interesting sketch of their surroundings, and a synopsis of the many improvements made in society and in dentistry since that time.

A vote of thanks was given to Dr. Codman for his address, and a copy requested for publication.

A vote of thanks was also presented to the retiring president, Dr. Wilson, for the able and impartial manner in which he has presided over the Academy during the past two years.

At six o'clock, adjourned to partake of the anniversary dinner and banquet, which was an elegant affair. The newly-elected president, Dr. Seabury, presided, and he thanked the members for the honor conferred upon him, and called upon the venerable Dr. Elisha G. Tucker, who was present, and now in his eighty-second year, for some remarks. Dr. Tucker responded, and expressed his gratification at having had the pleasure and privilege of attending every annual meeting since the Academy was organized, and spoke of the old pioneer dental practitioners of Boston and other parts of our country, who have nearly all passed away. Other pertinent and well-timed remarks were made by many of the members, and everything passed off very happily.

This society was founded in 1867, in Boston, and its career has been one of uninterrupted success, and it has accomplished much for the advancement of dental science and for the elevation of the profession. Monthly meetings are held at the rooms of the Boston Medical Library Association, 19 Boylston Place, which are well attended and replete with interest. At the last meeting, held December 4, papers were read by Dr. D. W. Fellows, of Portland, upon "Fracture of the Jaws," and by Dr. J. E. Waite, of Boston, on "A Rapid Method of Inserting and Finishing Contour Fillings without a Matrix." Each paper was followed by a discussion on the subject presented. Dr. F. G. Eddy, of Providence, exhibited a new mouth-piece for saliva-ejectors, and Dr. Waite exhibited a nitrous-oxide light for photo-microscopic purposes. George T. Baker, D.D.S., of Boston, and William S. Sherman, M.D., D.D.S., of Newport, were elected associate members, and W. W. H. Thackston, M.D., D.D.S., of Farmville, Virginia, was elected an honorary member.

EDWARD N. HARRIS,
Corresponding Secretary.

366 COLUMBUS AVENUE, BOSTON.

TO THE EDITOR:

I think you would do the profession a favor if you called attention to the Perry Separators editorially. They have been written up by Dr. Perry very fully, but I do not think that they have been appreciated by those who have not tried them as they deserve to

be. Among my friends I find few who have used them. They are expensive; but from two months' use I am free to say that, to a dentist who has even a moderate practice, they would pay for themselves in the increased work he can do if he had to get a full set every three months, to say nothing of the better work that can be done with them, and the comfort they are to both patient and operator. If used with judgment, they give at once sufficient working space, and cause, practically, no pain. I have repeatedly separated the six front teeth, opening and examining each space at one sitting, that too for nervous, "skittish" children, without objections being made by the patient, and in no case have I seen any injury done, or their use followed by any unpleasant after-effect. I can readily appreciate how their use, in the hands of one who was anxious to see how much space he could make, or one who forgets that patients have feelings, would be very painful, and that serious and permanent injury might follow. They were, I venture to say, not invented to be so used. There is a little pain at times, in separating the molar teeth, but if they are opened slowly it is very bearable and soon over.

There is need for a dam clamp that can be used without being in the way of the separator. With all that I have or have seen, the clamp must be put one tooth back of the separator or the dam be held by a ligature. Either expedient is at times very inconvenient, and in some cases either the dam or the separator must be dispensed with.

WILLIAM H. TRUEMAN.

PHILADELPHIA.

TO THE EDITOR:

Composition and process for tempering instruments: rosin, 7½ parts; whale oil, 1½ parts; pulv. charcoal, ½ part.

Directions for use: the instruments should be dipped in the mixture same as in water, then polish and draw the temper as usual. Small instruments should be dipped but once, larger ones two or three times. For engine and other small drills, which I want *very* hard, I heat to a bright red and dip in just the drill point, and do not draw the temper. In dipping for this last work dip the point straight down, not obliquely.

WILLIAM STEELE, D.D.S.

FOREST CITY, IOWA.

Current News.

To induce an alkaline condition of the oral secretions during pregnancy, Dr. Jno. H. Coyle prescribes fifteen grains bicarbonate of potassa, in cinnamon-water, fifteen minutes after each meal.

DR. R. B. ADAIR syringes the pocket of an alveolar abscess with equal parts of peroxide of hydrogen and bichloride of mercury one to five hundred.

DR. WARDLAW thinks the influence of sex positive as a predisposing cause of caries, the excessive liability in the case of pregnant females being explained upon the principle of the vitiated condition of the fluids of the mouth consequent upon systemic disorder, their corrosive properties being thus increased.

FOR starting a filling in a large cavity, Dr. W. C. Browne places in the bottom a pellet touched on the under-side with damar dissolved in chloroform.

DR. H. S. COLDING thinks that the best way to make a dentist is to select a boy with good mechanical abilities, and put him to work at the machinist's trade for two or three years; then give him the spring and summer course in the infirmary of a first-class dental college. He thinks this a better preparation for the college course proper than years under a preceptor.

ANTISEPTIC mouth-wash, Dr. S. A. White's: four drachms carbolic acid crystals; three ounces glycerine; three ounces water. Use with soft tooth-brush.

KEEP on hand a supply of Belding Bros. embroidery silk on small spools; teach your patients how to use it, and give the patient a spool, exacting the promise of frequent use. The cost, one cent a spool, is nothing compared with the good you will do.

B. H. CATCHING.

A COMPLETE, separate, cross-topical index is now in preparation. Do not have Volume X. bound until you receive it.

The topical index for Volume X. will be bound separately this and succeeding years.

Do not make the mistake of having the topical index for Volume IX.—contained in the January number of Volume X.—bound in the latter volume, but wait till you receive the topical index for Volume X., which will be ready in a few days.

The topical index for Volume IX. has been so popular that other and rival journals have adopted our idea; but to the INTERNATIONAL belongs the credit of introducing an exhaustive annual topical index.

CHICAGO AND VICINITY.

DR. ALLPORT treats hyperæmia of the pulp due to thermal changes, after inserting large gold fillings, by covering the filling with oxyphosphate of zinc cement, and renewing it as occasion requires until such time as normal action is re-established.

THE Chicago Dental Society is making preparations for its annual banquet. We hear that strict prohibition is to be enforced, that nothing stronger than apollinaris and cigars will be permitted.

RECENT news in regard to the health of our friend, Professor Truman W. Brophy, is not very encouraging, but we hope to be able to give a more favorable report later.

DR. FERNANDEZ, of Chicago, has a neat little wrench for use with the Brophy band matrix. It is constructed with a flexible shaft and can be used at any angle. The shank of a watch-key is soldered to a short piece of steel coil spring, and the opposite end of the spring to a straight shaft of any desired length. It can be made in a few minutes and is very useful.

LA GRIPPE has reached Chicago, and many of her citizens are in its grip just at present. So far it has not assumed a serious form, and, no doubt, out of respect for our record as the most healthy city in the union, it will touch us mildly.

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Original Communications.¹

TREATMENT OF THE TEETH DURING PREGNANCY.²

BY W. H. DWINELLE, M.D., D.D.S., NEW YORK CITY.

THE mere mention of pregnancy suggests to the mind of all a deranged and, in a certain sense, an abnormal condition of the system involving acrid and acidulated secretions of the alimentary canal, especially of the mouth. Before proposing a system of treatment for teeth during pregnancy, we will consider their condition under this contingency, the *cause* of that condition, and then the remedy. The causes may be (1) local and (2) constitutional,—the nervous derangement of the system and the profound constitutional and mental disturbance.

In a pregnant woman we recognize a human being whose function and office is to reproduce within herself another living being. She is to supply from the alembic of her own ever-accumulating and ever-wasting storehouse the material to be modified and assimilated into a duplication of herself. All the elements must be appealed to to contribute to build up and perfect the organization in her charge; especially must she furnish an abundance of the

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in this country.

² Read at the Nineteenth Annual Session of the New Jersey State Dental Society, Asbury Park, July 19, 1889.

elements of the phosphate and carbonate of lime for the bones and teeth of the embryo man. These elements must be supplied and derived from the food taken into the system by the mother. If there is not a sufficient supply furnished from this source, it must, to a certain extent, be taken indirectly from her own organization and appropriated to that purpose. So that her system, being robbed at large of the elements needed for the child, literally feeds on itself, like Dr. Tanner, fasting for forty days, consuming seventy pounds of himself, or like bears hibernating,—the winter cannibals!

We do know that we are but chemical laboratories, containing all of the elements within ourselves. Knowing this, it is easy to conceive how these elements may be constantly changing their relation to each other, how they may, by chemical resolution, be brought into solvent condition and be appropriated or diverted from one part of the system to another. To pursue the subject of waste, absorption, and appropriation further, it may be possible that in the process the tax on the tooth-material is not alone called upon, but that the bones generally have to yield a portion of their lime salts, even to the loss of their integrity for the time, to satisfy the demands of nature. We have no doubt that rickets and bone-malformation generally might be traced to deficiency of lime at the critical period when it was most needed.

The craving or longing of pregnant women for lime, for chalk, plaster, and clay are indicative of this demand of nature. Hens will not lay eggs with perfect shells unless they have access to lime in some form, and every aviary has for its motto, "No lime, no eggs; no eggs, no birds." The wild animals of the woods make pilgrimages to the "deer lick" to abate their longing for salt; all of these, and scores of others, are but dumb appeals from the unsatisfied chemistry of nature.

Assuming that we have a full appreciation of all the unhappy environments and associations connected with pregnancy, the exalted nervous tendencies, the mental and physical disturbances, the acrid and irritating secretions that come of them, the appeals to our higher sympathies and loving and tender care, giving the fullest meaning to the sentiment that the gentlest natures, when shattered by incessant pain, enfeebled by disease, often misrepresent themselves and permit the spasmodic throes of a pain-goaded organization to be the exponent of what *they are not*. Admit all these things, and assuming every sweet sentiment in tribute to "God's best gift to man," the practical question is still before us,—*the treatment of the teeth during pregnancy.*

The first thing and the last that meets us at the very threshold of our investigation is acids and acrid secretions, dissolving and destroying the teeth, accompanied with pain and exalted sensitiveness, to a degree beyond expression. I have repeatedly observed instances where patients' teeth have decayed and wasted more during a single period of gestation than during all their lives before.

What is the remedy and what the treatment?

The first thing to be done is to consider the importance of the general nutrition of the mother with well-selected diet, and especially whole wheat food, to make sure of the phosphate portion of them which is contained in the four outer capsules of the kernel, and which in the manufacture of superfine flour are wholly rejected. Oatmeal, too, is an excellent phosphate cereal. The next thing is to charge the system, through the stomach, with bone phosphate of lime in solution or in the form of a powder, spreading the same upon the food to be eaten, or distributing it over the same with a receptacle in the form of a pepper-box, literally using it as a diet, until the system is *saturated* with it; at the same time, it will be well to use lime-water, natural Vichy water, ever dieting towards the *alkaline*.

Use tooth-powder in which bicarbonate of soda is a generous ingredient, and have all washes of the mouth contain the same. For general tonics I use sometimes other forms of the phosphates, such as the hypophosphates and lactophosphates, with excellent results. Under some conditions I use nux combined with myrrh and tincture of iron; this last, when used with Vichy water, is entirely harmless to the teeth.

In using the phosphates, select that which is derived from the bones of animals, never that from the phosphate rock; the bone-phosphates are potent and are readily taken into and assimilated with the system. The phosphates from the rock are inert, extraneous, non-assimilable, and useless to our animal economy, although chemically they are the same.

For acid and sensitive teeth, subdue with soda applied in saturated solution to the teeth, then with such obtunders as may be most effective; excavate and fill with pink gutta-percha to bridge over to the period when the patient is able to endure more permanent operations.

Extracting the teeth during pregnancy should be avoided, if possible; try such palliative treatment as may bring the teeth into subjection; but if this cannot be done, and the pain from them becomes hazardous, do not hesitate to remove them.

We know that we can change to a great degree the density of the soft structure of the teeth of young, overgrown girls—who, by overstudy, under-feeding, and under-sleeping, have rendered them so—in a few months by proper mental and physical rest and phosphate treatment; for we have ourselves done this repeatedly to the welfare and safety of the teeth which otherwise would have been lost, giving us assurance that in the ever-changing chemistry of the varying solvents of our organization they may be so directed that the problem of recalcification will be capable of demonstration and subject in a large measure to our control. I forgot to mention, in passing, that none of the cereals is richer in phosphates than Indian corn. Barlow, one of our New England poets, referring to the sturdiness of the men of his time, said of them,—

“Whose bones are made of Indian corn!”

I might refer to phosphate paste and my method of using it, but time forbids. I might refer to a case reported several years ago, wherein rapid erosion of the teeth was immediately arrested by its use, together with general treatment, to general absorption, and wasting of the teeth; but this would come under another head, except so far as it might illustrate the theory of the diversion of the elements of our system.

I copy from my note-book two cases which, with many others, confirm in my mind all I have said in favor of the bone-phosphate of lime.

“Mrs. C. had passed through two painful periods of gestation, with excessive acid secretions and vomiting most of the time, giving birth to a girl ten years ago, and two years later to a boy. The girl's first teeth were remarkably poor. All that were erupted of the second set can be cut away as though they were chalk. The teeth of the boy are all even worse than those of the sister.”

When the mother became pregnant a third time, with all the symptoms in an unusually aggravated form, I at once put her on the phosphate treatment, and prescribed diet together with general tonics. She at once began to mend. The acid secretions and eructations abated entirely, her vomiting ceased at the end of the second month, and did not return. She passed through a remarkably healthy gestation, free from all annoyance or discomfort, when she gave birth to a boy. You may anticipate that I watched the eruption of his first teeth with interest. They proved to be of the finest quality. The six-year teeth are already fully erupted, perfect in all respects, and of unusual density.

▲

Another case, which I will not give in detail, wherein a mother had four children. With the first there was no phosphate treatment; child's teeth very poor. In the second phosphate treatment; the best of teeth, second set most all in. Third child, mother away in Europe, no treatment; very poor teeth, both sets. Fourth child, phosphate treatment; the best of teeth so far. I could refer to many other cases confirming the benefits of phosphates.

As regards the primitive phosphate rock, it is unassimilable and inert to the animal economy. It had to go through a process nearly commensurate with the age of the world up to a comparatively recent period,—a process involving its passing from its primitive state through the stomachs of animals, ever evolving higher and higher through the ages till it reached the kindred mammalia, the phosphates of whose bones alone are potent and assimilable to the human system, and yet each are chemically the same; showing that there is a subtle chemistry behind, which the chemistry of our boyhood takes no cognizance of.

The vegetable kingdom cordially responds to the tonic influence of animal phosphates, as all agriculturists and fruit-growers know.

The theme of the ever-changing chemistry of our systems could be enlarged upon to the extent of a very interesting essay. I hope some will avail themselves of the opportunity of distinguishment in this direction.

I do not claim any special originality in what I have laid before you. Others have given their experience and successes, for which I feel under great obligations to them. I attempt only to give you my own and my faith in the promise it gives.

In the future I believe that the preparations of the animal phosphates are to take an important place in our practice. With children as well as those of maturer years its influence for good is marked and decisive, as we have already demonstrated. Pregnant women thrive on it, nature responds to it with avidity, and the most happy results follow its use. Our profession more than any other is interested in its quality and its potency to overcome many of the evils that beset us, which I believe we shall yet accomplish to the relief of humanity and the glory of our calling.

**BLEACHING OF DISCOLORED DENTINE PRACTICALLY
CONSIDERED.¹**

BY E. P. WRIGHT, D.D.S., RICHMOND, VA.

IN the report of the proceedings of the March meeting of the First District Dental Society of New York there appeared a paper which was most scientifically discussed,—a method of bleaching discolored dentine, by Dr. Kirk, of Philadelphia, in which he gave the credit of inventing the apparatus, there used, to myself.

I do not design nor wish to make an elaborate or scientific defence of this method; that Dr. Kirk has done sufficiently; but I simply desire to set up claims for the restoration of discolored crowns to comparative usefulness by bleaching and filling, as against decapitation and crowning. To ratify these claims it is obviously necessary that certain prejudices, in the minds of a large class of practitioners, should be done away with.

First of all, our experience has proved, beyond question, that dentine can be bleached without subsequent re-discoloration. To this proposition, however, we allow consideration for that state of peculiar discoloration which is so familiar to us all, the color of which is from a light to a very dark yellow. The cause of this discoloration seems to be attributed, by the profession, to some defective or peculiar arrangement of the dentinal tubuli, which takes place during the stages of calcification.

When two years ago I began a series of experiments, with a view to the application of free chlorine and other bleaching agents to discolored dentine, I found such insufficient data to go upon, that my labors were crowned with poor success, and at the same time proving an expensive thing to my patients; as I candidly admit that I ruined several teeth by making them darker than they were before I began treatment. I trust, however, that the victims on the altar of science may be properly resigned, and have no malice stored up for me.

When we are able to make up our minds to the importance of

¹ Read at the opening meeting of the Odontological Society of Pennsylvania, October 5, 1889.

preserving the tooth-structure, even when it is not so slightly as we might desire, and refrain from removing the natural tissue for a questionable substitute, we will have come to a wise conclusion.

With great respect for those who are madly rushing to porcelain teeth, I would say that they are doing the profession an injury, as there is no higher glory for one who professes the healing art than that of preserving the natural tissue. This tendency to porcelain crowns and bridge-work, in its many phases, is going to have, ultimately, the same effect upon the profession and the public that the introduction of a plastic base plate has had.

I would place the porcelain crown on the one hand, and the vulcanite base on the other,—they stand in the same relation to the advancement of our profession. We all regret the universal favor which has been accorded the vulcanite base, and rather look forward, I think, to the time when we shall have a reliable method by which we can retain the natural organs. Are we not taking a step in the right direction by aiming to accomplish this, and thus put a curb on that bent of our disposition to a retrograde movement?

A student of dentistry, looking through our journals, would be inclined, I imagine, to the impression that there was little else in dentistry than crowning and bridge-work. This is wrong; and while it is true that all plans are made clearer and plainer by discussion and illustration, yet too great emphasis on any theory is hurtful to the people.

In advocating the retention of the natural crown, at a sacrifice of symmetry and beauty, compared with an artificial one, we would avoid this error, desiring only to present to you the intrinsic merit of the question, stimulated by a firm conviction that, if we do our duty in preserving the natural organ, it will be a gain to the profession and keep us on the upper plane.

While it is an easy matter to bleach discolored dentine and preserve the natural crown in good shape, still it must be admitted that it is easier to remove the natural crown and substitute a porcelain one; but, as before stated, it is not well, nor is it to the interest of the highest aims of our calling, to consider too much the matter of ease or other minor effects, either to the patient or the operator; and as we are considering this subject from a practical point of view, we should look at it in that way, because, even though the individual efforts may not be so beautiful or, at first, so satisfactory from an æsthetic point, still we have satisfied our conscience, we are teaching our patients the importance of the natural organs, and encouraging an inventive and upward tendency among

our brethren. We are maintaining the standard set for us by our great men; in short, we are doing the best we can.

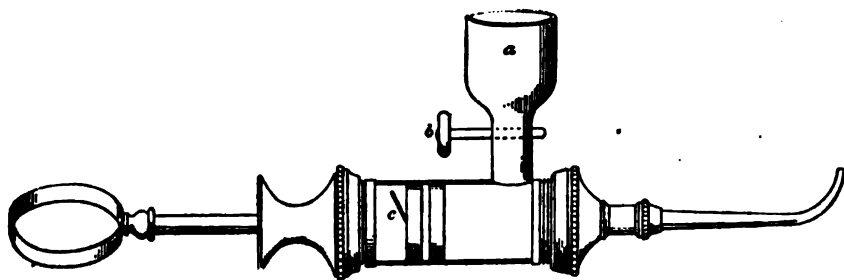
Before discussing the matter in the light of a valuable principle, we want to know what has been accomplished.

In the outset we state our positive belief that teeth properly treated—and certainly those amenable to the chlorine treatment—do not re-discolor; this assertion is based upon experience extending over two years; and, after many experiments, so far, I have not had a single re-discoloration where I have succeeded in bleaching. In my experience, the yellowish condition, of which mention is made at the beginning of the paper, has been very difficult of correction. It may be well to state that the present literature on the subject favors the idea that this latter peculiar discoloration can be removed by the use of dilute sulphuric acid, and there are many methods by which it is applied. My prejudice to sulphuric acid or any other acid known to act upon, in a deleterious sense, the organization of the tooth-structure has prevented me from experimenting, to any degree, in that particular line; therefore I cannot enlighten you upon the uses of sulphuric acid as applied to bleaching teeth. Saying this much of this peculiar discoloration, which is a yellowish mud-color, and of which we know so little in a remedial sense, and of the supposed activity of the agent (sulphuric acid), we pass on to the discussion of that class of discolored dentine with which we are familiar, and of which we know something positive.

Very lately, through the assistance of an eminent chemist, Dr. Froehling, I have succeeded in formulating a theory as to the cause of these peculiar discolorations. The value of this theory is questionable, and I hesitate to advance it. It may be well, however, to state in general terms that these discolorations can only be organic and perhaps of a fatty nature, and our failure to remove it heretofore has probably been due to the inadaptability of the method employed to destroy the fatty matter contained in the tubuli. I regret that this conclusion should not have been arrived at sooner. I have now, however, formulated a plan by which it seems there will be no difficulty in the future in thoroughly removing every particle of fatty matter from the tubes.

That you may understand more clearly the plan I wish now to place before you, I will hand around the apparatus to be used in the first steps towards the treatment of discolored teeth, as aforesaid. The instrument consists simply of an exhaust-pump, made on a small scale, of a simple retort connected with the barrel in which the piston works; the contents of the retort are controlled by a stop-cock

which governs the flow of whatever chemical it may contain. The agent recommended to be used is ether, chloroform, or petroleum ether (rhigolene), either one of which will act powerfully upon and dissolve the fatty globules. This apparatus must have its point inserted into a preparation such as is used in the hectograph, a material



which is not affected by either of the three agents mentioned; it is, however, easily acted upon by another of our favorites, ammonia, and thus its use is debarred.

I believe the hectograph composition can be made by putting pure glue in cold water, leaving it until it swells, draw off the water, melting it in its absorbed water, and mixing about six parts of the glue solution to one of glycerin. This compound is intended to be used after the rubber dam has been placed around the tooth and the tooth made dry, that the rubber dam, which is designed to keep back the moisture, shall not be interfered with by the action of the chemical agent employed.

The *modus operandi*, with the exception of the incompleteness of preparatory treatment, as will be shown later on, has been clearly described by Dr. Kirk, and published in the *Cosmos*. I shall therefore not take up your time in repeating it, but will close my paper with the proposition that ninety-five per cent. of discolored teeth can be bleached in from not more than one to three sittings of one hour each. Of course, preparatory treatment is necessary, and precaution also in regard to the use of oleaginous substances within the canal. If such have been used, from one to two sittings, close upon each other, will be required, and the oily substance previously removed as before indicated.

Of the two or three failures, strictly speaking, which I have encountered, I can attribute none of them to other causes than defective preparatory treatment. I think I see, judging from failures to bleach at all, a strong argument in favor of the theory

advanced early in the paper,—to wit, malformation of the tubuli; however, it would not be safe, in view of our lack of information and experience, to conclude that this is a fact, and thus not enter into the experiment suggested, and determine positively why we have failed in this class of discolorations. The use of chlorine gas, the agent we have employed until recently, we have concluded to be less effective than chlorine water, and shall in the future—and do now—recommend it to this body as the agent to be used in all bleaching operations.

I think that we have fallen into an error when we conclude that we can remove all that is necessary of the fatty matter by a simple application of some such agent as ammonia, borax, or bicarbonate of soda. This I believe to be impossible, and suggest the idea from the known bleaching properties of chlorine; and when we have experimented further, we will find that the elaborateness of our treatment will be confined to the primary instead of the finishing stages of the operation; at any rate, we will come down from the elaborate chlorine treatment to the apparatus mentioned earlier,—the object of which shall be the thorough cleansing of the tubuli of oleaginous matter, and when we have done this a simple application for a short time, within the canal of the tooth, of freshly-made chlorine water will be sufficient.

If you will take the trouble thoroughly to remove all fatty matters from the canal of an extracted tooth, and then immerse it in chlorine, you will find no perceptible change in its appearance even after hours of such immersion; if, however, this tooth is immersed in chlorine water, you will find that you have thoroughly and permanently restored its color.

There is no inducement for chlorine gas to penetrate to the ramification of the tubuli if the contents are dry; therefore, a very considerable force is necessary to force it through these ramifications, and the operation, so far as my experience goes, is necessarily uncertain, or at least unsatisfactory.

It is the periphery rather than the base of the tubuli that is to be treated, and we should not overlook the fact that the peripheries of the dentinal tubuli frequently extend into the enamel, making it that much more necessary that this zone should be bleached, as the nearer the labial surface the tubuli extend the surer they are to show themselves through the translucent enamel.

HOW TO SPLICE ENGINE BANDS.¹

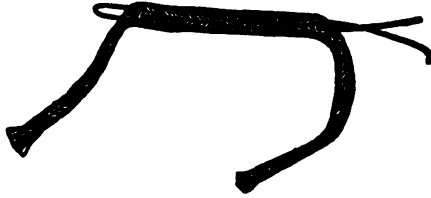
BY GEORGE A. MAXFIELD, D.D.S., HOLYOKE, MASS.

IN thinking over what I could present under the head of Dental Technics, and after extended inquiries among my dental friends, and finding that none of them knew of this method of making a splice, I decided to demonstrate it at this meeting. This method is not original with me,—though I am probably the first to demonstrate it to the profession,—but was invented, I believe, a few years ago by a foreman in one of our woollen-mills at Holyoke, and is now used in most of the mills where a braided band is used. The manner in which most of the dentists splice their bands is, to say the least, a very clumsy one. It takes considerable time to make it, it is not very strong, and never runs smoothly. The splice which I shall show you is made very quickly, makes a strong, even splice, and runs smoothly; in fact, the harder you pull on the band the stronger it holds. The instrument, which I shall call a needle, used in making the splice is made of piano wire, bent in the form of a hair-pin, the free ends inserted in a wooden handle, and fastened so that they will not pull out, allowing the bow end to extend about two and one-half inches from the handle. The sides of the bow must be bent near enough together to allow it to pass easily through the centre of the band.

To make the splice: Measure the exact length the band must be when spliced, mark it, then cut off the band say seven inches longer. This extra length is taken up in the splice. A splice six inches long is stronger and runs smoother than one only four inches long. Unravel about an inch of each end of the band. Take the needle and pass the bow into the band where you have marked the end to be, then pass it through the centre of the band one-half of the extra length, and then out again, as at Fig. 1. Take the other end of the band and insert into the bow of the needle just enough to hold, and pull it through and out where the needle first entered. (See Fig. 2.) Treat the other end of the band in the same way as the first (see Fig. 3) and draw the free end through. Smooth out

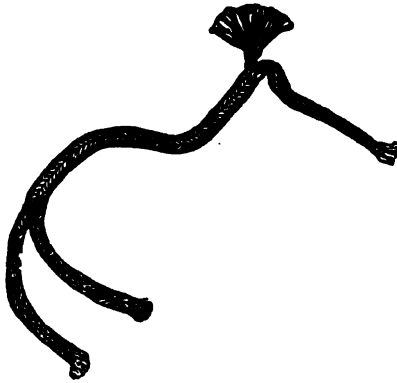
¹ Demonstrated at the Union Dental Meeting at Springfield, Mass., October 23, 1889.

FIG. 1.



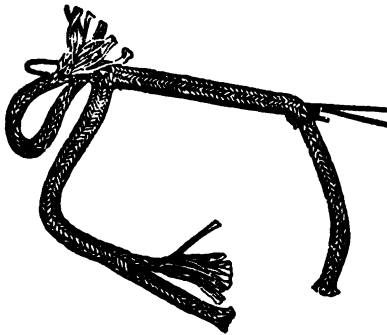
the splice, and out the ends so that they will come inside of the band, and your splice is finished. If you wish to make the splice

FIG. 2.



smoother, roll it between two pieces of wood. If your band has a *core*, it requires more painstaking in making the splice; yet it is

FIG. 3.



easily done. First draw out the core from each end the length the splice is to be, say six inches, and so manipulate it as to have the

ends come inside the band, exactly where the core has been cut. If you are not particular about this, you will have a weak spot at each end of the splice. If you are particular in splicing this kind of a band, you will hardly be able to detect the splice after it is finished.

FRACTURE OF THE JAWS.¹

BY DR. D. W. FELLOWS, PORTLAND, ME.

MR. PRESIDENT AND GENTLEMEN:—It is my purpose to-night to consider fracture of the jaws, and particularly fracture of the lower jaw; but I think it not inappropriate to present a brief review of the nature, causes, and diagnosis of fractures, the principles of treatment, and mode of cure.

Fracture is defined as a solution of continuity of the osseous tissue.

Fractures may be simple, compound, comminuted, or impacted. These terms are familiar and need no explanation.

Various diseases, by impairing the structure of the bones, act as predisposing causes of fracture. The most important of these are syphilis, cancerous diseases, osteomalacia, and rickets. But fracture of healthy bones must be always a result of violence, and nearly always of external violence, either direct or indirect, though in numerous instances bones have been broken by muscular contraction.

The reliable symptoms of simple fracture are crepitation, deformity, and preternatural mobility. The peculiar sound caused by rubbing the ends of the broken bone together, known as crepitation, is characteristic of fracture. It may generally be felt as well as heard. This symptom may be obscured by much swelling or by great depth of soft tissue, and in impacted fracture it will be absent.

Deformity is generally, but not always, present, and it may be a result of the cause which produced the injury or of the action of muscles upon the fragments.

Preternatural mobility is an important symptom of fracture, and is rarely absent unless the fracture be impacted.

The manner of repair in cases of fracture merits some consideration. The first stage, which is a period of preparation, occupies

¹ Read before the American Academy of Dental Science, December 4, 1889.

about one week. During this period, in favorable cases, inflammation subsides, the inflammatory products and extravasated blood are absorbed; pain, swelling, and traumatic fever disappear. From the eighth to the seventeenth or twentieth day the parts become red and injected, and covered with a layer of embryonic cells, and towards the end of this period the granulation tissue becomes more and more firm, until, finally, the tissue is converted into bone, forming, in the case of long bones, two layers, one within the medullary canal and the other encircling the ends of the fragments. This is known as the temporary or provisional callus, which is Nature's splint for holding the fragments in position until repair is rendered complete by the deposit of osseous tissue between the broken ends. The temporary callus, it may be stated, is much harder than normal bone. The final stage of repair, after the bone has been united by a sound bony tissue, consists in the absorption of the provisional callus, leaving the bone smooth and in proper condition for continued performance of its function. The whole process may occupy several months, and if the ends of the fragments are not in proper relation to each other the process may be rendered very long and tedious. In union of a fractured lower jaw the temporary callus is found to be much less than in ordinary long bones, the union being direct after the formation of a small encircling band of temporary callus.

Surgeons declare that the treatment of fractures requires a greater amount of ready knowledge, skill, and judgment than any other department of surgery, and that they always approach them with some misgiving.

Surgeons assure me, further, that fractures of the lower jaw are perhaps the most difficult of all fractures to treat successfully, or in such a manner that there shall be no subsequent impairment of function, no discomfort, and no deformity.

The diagnosis of fracture of the lower jaw is usually not difficult. Nearly always crepitation may be found, together with preternatural mobility, and, I believe, in most cases there will be some deformity, though in a single fracture of the body of the bone it may not be marked; and yet the injury, like many others, may be easily overlooked unless the attention is specially directed to it. In one case that I treated the patient was examined by two physicians at different times and no fracture discovered, although the bone was broken through the body at the right of the symphysis, and through the left ramus. The man was afterwards taken to the Maine General Hospital, and when I saw him crepitation was

distinct, and the deformity and mobility of the parts quite pronounced.

The methods that have been employed for reducing and treating fractures of the jaw are almost innumerable. The various forms of bandaging, and external splints, tying the teeth with thread or wire, piercing the fragments and wiring them together, have all proved very troublesome or ineffectual, except in simple cases without displacement of the fragments.

The idea of an interdental splint is far from new, some such appliance having been used by Paré three hundred and fifty years ago. Dr. Hamilton used gutta-percha moulded to the teeth. Plates or splints of metal have also been used, but the peculiar adaptability of vulcanized rubber for the purpose seems to have been first recognized by Dr. Gunning, of New York, who used it nearly thirty years ago (February 12, 1861).

Dr. Bean, of Georgia, used it in the same manner at about the same time or a little later.

The fullest description of the appliance and its application is given by Dr. Gunning in the *New York Medical Journal* (between 1861 and 1867).

For a single, simple fracture of the lower jaw he employed a splint covering the lower teeth and gums, which he kept in place without fastening, the upper teeth resting upon the smooth upper surface, thus allowing free motion of the jaws, and causing but little inconvenience in speaking and eating. When found necessary, however, the splint was fastened by passing two or more screws through the rubber and into holes drilled in the teeth. In all fractures back of the teeth, Dr. Gunning advised a splint fitting over the crowns of the upper teeth as well as the lower, and so fastened by wings and straps that the lower jaw shall be held in a constant relation to the upper.

An apparatus constructed, it would seem, upon correct principles, but too complicated for general use, was devised by Dr. E. A. Clark and Dr. Homer Judd, of St. Louis. This consists of two separate plates fitted upon the upper and the lower teeth, with spiral springs between, and an elastic sling bandage passing under the jaw strong enough to counterbalance the action of the springs, and thus pressure and counterpressure are exerted upon the jaw to keep the fragments in position, while the whole is movable and under the control of the muscles.

I have recently been called upon to make and adjust the interdental splint in two cases, in each of which the lower jaw was

broken through the body in the region of the right lateral incisor and through the left ramus.

The first was a merchant of Portland, who, on entering a railway station in a neighboring town, suddenly became faint or dizzy and fell forward, striking the face upon the corner of the door-step, inflicting severe bruises, breaking the lower jaw as described, and completely severing the superior maxillary bones from all connection with the bones of the skull. Just what the line of fracture was in the upper jaw it was impossible to determine; but it was probably through the body of each maxillary bone. This lesion was discovered while preparing to take the impression of the upper jaw, for, on grasping the upper teeth, the motion was quite free, the sensation being similar to that of taking hold of a very ill-fitting set of artificial teeth in the mouth.

The other case was that of a man employed in discharging coal from a vessel. A staging gave way and he fell to the deck.

One arm was broken, severe bruises inflicted, and the crown of the upper left central incisor broken off, in addition to the double fracture of the lower jaw. In each of these cases impressions were taken of the upper and the lower teeth without any attempt to reduce the fracture. Plaster models were made and the model of the lower jaw sawed through at the point of fracture, and adjusted in normal occlusion with that of the upper jaw. The two were then put in an articulator, and separated to a small extent to allow space between the front teeth for taking food. In one case a superior incisor had been previously lost, and in the other, one was broken at the time of the injury. This condition was somewhat convenient, but by no means necessary, in the treatment. After forming the splint in wax to cover the crowns of all the teeth, and to fill the space between the grinding surfaces of the teeth, the whole was removed from the articulator, flaked, packed, and vulcanized.

In finishing, the rubber was cut away in front, so that the upper front teeth were not covered, thus leaving a space. A narrow opening was also made at each side to allow the parotid saliva to flow into the mouth.

The splint was adjusted to the teeth of the upper jaw, and then the fragments of the lower jaw were brought into position, the teeth inserted in the sockets prepared for them, and the jaws kept closed for a time by means of the Garretson bandage. These were worn, in each case, about six weeks without removing, when the bone was found to be so well united that they were no longer needed.

Reports of Society Meetings.

ODONTOLOGICAL SOCIETY OF PENNSYLVANIA.

RECOLLECTIONS AND IMPRESSIONS OF MY VISIT TO THE AMERICAN DENTAL SOCIETY OF EUROPE, AT PARIS; BRITISH DENTAL ASSOCIATION, AT BRIGHTON; AND THE FIRST INTERNATIONAL DENTAL CONGRESS, AT PARIS.¹

BY W. G. A. BONWILL, D.D.S., PHILADELPHIA.

As your minister accredited to these foreign courts, it is expected that I shall relate whatever of interest came under my observation.

It is very proper that delegations should be sent on all state occasions, in order that an estimate may be drawn of just how nearly related we are to those who are so infrequently in communion with us. Nothing else has promoted the well-being of professions, trades, and societies so much as the close relations of intimacy gained only by personal contact with these great bodies.

That we, especially, should know our brothers across the water more intimately, as a body, is evident, for it would promote a better feeling than now exists towards "American Dentistry," and materially enhance and elevate the broad standard of dentistry which is so needed to give all a higher social status among ourselves and among the classes for whom we operate. The dental journals have carried every phase of work and thought from all parts to every hamlet of the civilized globe, yet I know, from this summer's experience, that we are far from that goal which every true man could desire,—the status vouchsafed to all the other learned professions,—and which we cannot hope to reach until we can learn to treat each other individually and collectively as is becoming gentlemen; until we can learn to estimate a man by what he has done, and extend to him the honor due him; until we can forget that science knows no nationality; then dentistry will succumb to the inevitable, and divest herself of her swaddling-clothes as a trade. I did not know when I left here the animus against the "American dentist;" but it did not take me long to sniff it when I reached England.

Personally, I was treated with the greatest consideration.

Everything was done to make my visit honorable and pleasant. At my clinics, at Brighton, the crowd around me was dense, and I was told—in fact, I could see and feel the spirit animating nearly every one—that no closer attention to my speeches nor demonstrations could have been given. To see such an anomaly as packing—welding—Abby's soft foil with smooth oval points was beyond belief, and they were as incredulous as my own countrymen after twenty years' teaching.

When I attempted to demonstrate the extraction of a tooth by rapid breathing the crowd was so great as to overpower my patient with fright, and he could not rapidly breathe. But I demonstrated it upon myself, to their satisfaction, by their pulling my beard and hair, pinching, and placing finger on the conjunctiva of my eye.

But, aside from all this personal respect and attention given me, I saw clearly that when the reports were made from the dailies, no mention was made of my operations, nor of me further than that "Dr. Bonwill, a leading American dentist, was present at the meetings." Another thing: before I went to Brighton, I found that my clinics were not down on the manuscript programme, although I had stated in advance that I would be present, and would assist in every way I could to make the meeting profitable. It was finally added.

What first led me to suppose that there was an undercurrent of feeling against the "American dentist" was, when I proposed to go into the American Dental Institute, a branch of which was at Brighton, in order that I could see what American dentistry was doing to honor its country, I was begged not to do so, as the next day there would appear in the circular, published regularly by the Institute, "That the celebrated Dr. —, an American dentist, had honored it with a call;" and it thereby would give status to its nefarious business and work to the detriment of the English dentist.

This American Institute, I learned, had several branches, and was run by a Jew who was not a dentist, but employed many young American dentists to give the most approved style of operations in every department; and they resorted to extensive advertising and special circulars as operations done only by the "advanced American dentist." Not wishing to give offence, I did not enter their portals. Notwithstanding the novelty of all I had demonstrated, this treatment could but confirm me now in my conjecture that I must suffer silent praise on account of the out-

rageous conduct of many men who were posing as American dentists.

To make it still more noticeable, I found that I was not down on the banquet programme for a speech in reply to the toast of "Visitors." Now after such personal attention by the best men in London, and at a banquet given by the dentists alone of Brighton, where I had already received the most honored seat, I was somewhat doubtful about accepting the invitation to the grand banquet. It was so very noticeable, I could but feel that there was some mistake, and that it would be corrected at the last moment. This was not done. At the banquet they gave me, next the officers, the most honored seat. All went off well until the visitors were called upon to reply to the toast. The French delegates were, with another visitor, called upon,—none of whose names were down for a speech on the programme; but my name was not called by the toast-master. At this juncture I was boisterously called for by a large number. It was an embarrassing moment to me. I could feel that the affair was intended to be not an insult to me, but a silent rebuke, at my expense, to the "American dentist."

I had already made a few remarks, at the opening of the meeting, extremely complimentary to the English dentists: That I was pleased to meet them; and, while I came to drink from their fountain of experience and knowledge, I should feel that my visit had been in vain if I could not give some recompense in what I would demonstrate of the class of operations I was personally doing in my office. This was very palatable to them, and yet it was not noticed publicly, except as a "characteristic American speech." At the banquet, to be sure that it was not aimed at me, I, while again using quite the same language and sentiments as previously made, spoke of what I had seen already in England, Germany, and France, as to the materials used, finding that plastics were the rule and gold the exception; and added, that *we* in America had concluded that there was nothing so well calculated to give to every operator such dexterity in manipulating plastics as excelling in the use of gold in contour work under both hand-pressure and the mallet. By the use of "*we*" I thought I would be sure to take the burthen off my own shoulders and perhaps please them by the greater authority than myself, my honored countrymen. This "*we*," however, brought things to a crisis, as I learned before I retired that night. One of England's honored Sirs told me that had I spoken for myself alone all would have been well, as they well understood what my character and standing was in their country.

This feeling was not universal, for many men came to me after my remarks and thanked me for my gentle touch. While very unpleasant for me at the moment, I did not regret that the blunder was made, for it brought to the surface what was already at fever heat; but the English dentist was too proud to speak of it, unless some good opportunity should offer. I am glad to have been the means of their laying before me, in all its blackness, the doing of the "American dentist" abroad. I shall expose these to you to-night in order that something may be done to make a radical change, so as to blot from the European escutcheon the ignoble title of "American dentist."

To make my position impregnable as a bearer of despatches to you from the dentists of Europe, I wrote to many of the leading practitioners in England, France, and Germany, and they were unanimous in denouncing the average American dentist as found among them. I need quote but from one of the best men in London. He said, "Then, there is another thing. We are accustomed to have everything possible made use of and perverted for their own purposes, by advertising-folks, like the American Dental Institute; and it was thought—I do not know as I said it before of my own knowledge—that your speech contained some plums for them—this Institute—to pick out and use."

This tells in unmistakable language what I had to bear for my countrymen, because of the dishonorable and disreputable men from America. There are others, too, who come from England, as well as from all the European countries, for the sole purpose of returning and placing on their signs the reputable and honored name, "American dentist," many of whom cannot speak one word of English.

The blunder of simply saying "we," while making me the target, also gave me the high privilege of being the exponent of the aggrieved, and I shall feel amply rewarded for the unpleasant position in which it placed me, if the schools of this country grow more careful in the class of students and the restrictions they place upon those intending to practise abroad. I was asked to lay this matter before my society, and have it agitated in order that this condition of affairs may soon terminate. To go on would place a veto on all international congresses, whether associated with the medical or as dental only. Were another congress to be held in London or England, Americans would not have a right to expect the courtesy which was so extensively lavished upon them in 1881.

The noble movement of the dentists of England then, in gaining for us a recognition in the "International Medical Congress" for the

first time, entitles them to the highest consideration and thanks. Everything is being done in their schools to give that social status to the dentist which is enjoyed by even the average medical man. They are more careful than we, by far, about the higher general education and men who have already better social standing. But they feel that their work is largely in vain when we are turning out such vast numbers to flood the market and sail under the banner of "American dentist."

While the average Englishman is a free-trader, yet, when it comes to the professions, he at once sees that it is unfair and unprofitable. Free thought they advocate, but not the freedom to force ignorance and ordinary ability upon them under the name of "American dentist." That they honor individual Americans for much of the advancement and progress of the last quarter of a century, and adopt the methods and practice of any of us who have proven it to be best, I have the honor to know, and the name of such is never withheld.

Until this assumption of one country over another as to being first can be settled to the honor of all, we need not expect that such parading will add to the character of dentists before the world. While America has justly the right to the title and honor of leading in the race of practical dentistry, we need not feel that it is because we have any better material to make dentists of. I found as bright men wherever I went as we have at home. But, gentlemen, circumstances very much alter the results. We have had the widest field for development in the immense destruction of teeth from our habits, with more general distribution of wealth to pay for operations, while in Europe it is the reverse. How few dentists are to be found in Germany, France, or England compared with the number in America! Besides, as dentists become better educated and are brought from the ranks of such as can be made gentlemen, and who value the tone and air that hang around the true professional man, we shall find fewer turned out than now.

At present there are more dentists than have a right to legitimate business, unless they will turn their attention to the poorer classes who are in such need of the competent operator. I can see that competition must come to the rescue or the poor will go without their teeth being preserved. Artificial teeth will be the universal degradation of the poor, and no effort will be made to rescue the living organs. I had many examples of high-toned American dentists pointed out to me who had given no cause for offence, and

who had at the same time made large practices without having advertised or spoken against the native talent.

I do not wonder that the American dentist should have such bad repute, and the feeling against the American physician is just as high. Germany and Switzerland particularly are growing more intolerant every year. When you consider how impoverished the average medical man or dentist is in any of the European countries, you can well understand that self-preservation must step to the front. If we could make the operations cheaper and better, and could reach thereby the poorest, who need our services as well, we might have the American push on.

One strong point I must make against my countryman is that, when he goes abroad as an American dentist, he does not hold up the standard of dentistry as taught here, but at once falls into the same rut as the native dentist. Many of those I met abroad confessed to me that they would starve if they did not give up and cater to the desires of those who had been educated to a certain standard! Few plates of partial sets are made without clasps, and the old gold spiral springs, which are seldom used in this country, are still in universal favor wherever I visited. To attempt to make them without would be suicidal to even the American. Instead of extracting every root, as we do here, all are retained and the plate placed in over them.

I did find one exception, in my student at Leipsic,—a graduate of the University of Pennsylvania, whom I taught my plan of articulation. He has braved it because he has a remedy by which he can do without the spring. When this is generally understood and practised the rule will change. If our men would follow the line of practice taught them, they could more honorably place on their cards, not "American dentist," but "Graduate of an American school."

Again, they take advantage of their own inability to perform good and lasting fillings, and resort to crowning in every instance, where we know that amalgam, and even gold, and for less money, could have been used. The reckless destruction of splendid teeth by crown- and bridge-work is something too awful to contemplate. I have seen, not only in Europe but at home, teeth crowned that could have been preserved for ten or fifteen years with amalgam, and often with gold. I heard one of our American boys, on the other side, boasting of the character of his practice, which had almost been revolutionized since crowning came into vogue, and he was doubling his income.

Now, while the average American has acted so unprofessionally abroad, I can see that his mission has aroused the native dentist to attempt more than he ever did before. His energy has been doubled, and it has urged him on to study and to fly for graduation to some school at home or abroad; and thus the American has been a blessing in disguise.

On the whole we cannot blame the American so much, for he has only gone, just as the Englishman, where the English language is spoken. This thing will correct itself in time. The schools in England, France, and Germany are doing a good work, and are holding on to many students who once would have sought our shores. In the University at Berlin I found, under Professor Miller, two hundred students. When I gave a clinic with gold and smooth points in my mechanical mallet, they piled up around me as if they were greedy to see and profit thereby. They were full of enthusiasm. The professor of mechanical dentistry gave me especial attention when I demonstrated my articulator and its laws. He sat up all night to arrange a set such as I had exhibited, so determined was he to succeed before I left. This school will be a great thing for the German student, as soon as Professor Miller can have more help from demonstrators. The burden on him now is rather too much. The demands in that country cannot be great, and consequently the number of students must be for a long time rather limited as long as there are so many poor who cannot pay high prices.

In Paris there are two flourishing schools, in which there is rather too much rivalry, but no more than to be found here. The French are ready and willing to add their ability and earnestness to elevate their profession. Their enthusiasm is unbounded in whatever they undertake, and I see no reason why there should not be a central school, where, from their ingenuity and precision in all lines of work, they should make splendid dentists, who will rival any of us.

It would be impossible to give you any idea of the character of the operations done in England and the continent, as their offices are sealed books. I could judge of them only by the description from each individual. The clinics given at the Brighton meeting I could not see on account of being engaged on my own work, but they were not very extensive. The papers read on anæsthetics were fine and worthy the highest commendation, showing thorough investigation and practical experience. The mixing of oxygen and nitrous oxide was certainly of value, and should be always used, as

it no doubt lessens any tendency to injury and obviates that purple hue so frightful to look upon when the gas alone is given.

These papers alone gave character to the whole proceedings and had an elevating influence. The practical part of dentistry did not have much show in extensive papers. Prosthetic dentistry was scarcely touched, and no discussion on the one paper that was read. The microscopical section was very fine, and showed great care and research.

The many abnormal and anomalous cases were not only interesting but instructive. Many plans of pivoting were shown as models, and bridge-work came in for its full share, even in England. There was one method of removable bridge which was well worthy of special mention. It was a bar anchored permanently between two teeth by either caps or amalgam in cavities of decay. This bar was narrow and allowed to be as wide or deep as possible, reaching from the gum to grinding surface, that it should prevent the teeth, which straddled the bar, from moving laterally, but allow of sufficient frictional bearing to keep the block of teeth firmly thereon. Where there was plenty of room, or rather depth or length to the crown, it was very practicable. It reminded me of Dr. Wm. C. Eastlack's plan of doing black work on metal plates.

The exhibits of manufacturers of teeth and instruments and chairs were fully equal to anything I have seen at our American Dental Association meetings. The English tooth is certainly beautiful and well made, and has all the advantages of ours, except, perhaps, it will not stand the test in soldering on account of the greater density. But for vulcanite and crown—all porcelain—we need nothing stronger or more beautiful and natural in the mouth.

The burrs given me by Ash & Sons are all cut by young women, and compare well with anything we have on this side of the water made by men. The "Dental Manufacturing Company" is not behind in anything, and proves that dentists can manage such an establishment both with profit and success, as well as manage a dental journal in the interest of dentists.

The colleges I had no chance to visit, as they were practically closed in London. While so much has been done to raise the standard, the end in view—to give to dentistry the same status as the physician—is not an accomplished fact.

I sat beside an M.D. who, with many other physicians, was a guest at the banquet, and, in conversation with him, he frankly stated that dentists were not considered on a par with physicians, although associated in the section of an International Medical

Congress. They feel towards the bulk of them their superiority, and only a favored few have the coveted social standing. I know one who was highly respected by the English dentists, yet he told me that the social status of dentistry, whether American or native, is far from gratifying.

We need not soon expect that same social position and recognition held by medical men, who have labored for years to reach it. Then, a higher educational step, such as the colleges in this country have just taken in the three years' course, will, if they have an honest preliminary examination, rapidly elevate the dentist. In England they are surely working to this end. I can see the barometric marks of elevation since I commenced in 1854. While you may turn out of your schools all that may come, instruct them, should they go abroad, not to assume the name of "American dentist," thereby implying a superiority to all other nationalities.

As I said, science is broader than nationality, and we should be a universal brotherhood, that, by our conduct to each other, we can let the world see that we are above the competition of the tradesman. This is all they ask of us abroad. So high has the feeling run against us, that the American Dental Society of Europe is frowned upon by the natives all over the continent, and it has but few to attend its gatherings.

The patent craze, in England, is not without defenders, especially when it comes to certain articles that require time, capital, and labor to perfect and put on the market, and where they are adapted to other uses than dental. Notwithstanding the number of inventions I have patented, I was not cut at, as at home, at any place or by any one. One prominent dentist of Paris, who had always opposed me, when in America, on patents, after he had read my argument in the *INTERNATIONAL DENTAL JOURNAL* for July, 1889, and after a talk with him and some invited scientific gentlemen on the laws of articulation and its application against evolution, asked me, "Bonwill, did you patent the articulator?" For several days I gave him no reply. He said, "If you did not, you should have done so, for it well merits a patent."

Then I feel satisfied that, if we shall have more consideration for the dental profession on the other side, and shall teach students not to use "American dentist" on their sign or specially refer to it, but simply to state the college or colleges where they have graduated, we shall bring about a change in the condition of affairs.

I would, in the mean time, advise my English friends to dash ahead and show that they can be equal to any emergency. Let

them rise above such surroundings, and take the advice which I so generously gave them at the banquet, and which I gave wherever I went on the continent, to cultivate the art of filling with gold, as I showed them at my clinics. This would not only enable them to place in more gold fillings, but, from the less time consumed by these methods, they could make equally as much money as when plastics are used. Besides, patients would bear the operation with pleasure, since gold certainly looks superior to amalgam in many places; and, as to pain, it could not be an objection, and the time consumed would not be much greater than that for some amalgam fillings or the placing on of a crown.

If they could universally change their system of fees, I think, they would command more profit and be to the advantage, in every way, of operator and patient. But whatever changes they may make, there cannot be so many teeth preserved satisfactorily unless more time is taken to wedge them apart and contour every approximal filling. If they only use amalgams and other plastics, it must be done only by getting greater space between the teeth to prevent future decay, and make it tolerable in mastication. Contouring in England and on the continent is done but seldom; nor can it be done to be of value unless, as I have said, time is taken to wedge teeth apart to prevent future caries.

Then what I said at the banquet, at Brighton, I do not regret, for it brought to the surface the drift, and I have no doubt of the result of the airing. When we look at home, we find the same spirit existing among our own countrymen. Jealousy, envy, and competition, from members alone, is rampant, and so it may ever be. We have, perhaps, as great a number of poor dentists, in proportion, as elsewhere. Higher education and better material will weed out the weaker, and by the strenuous execution of the laws we can expect that dentistry will rise or go down, as, by the laws of political economy, they must.

We should not lose sight of the ever-present fact that the poor are not to be forgotten. We cannot all be high chargers. We must let every man set a valuation on his own operations, and he who does the best need not fear. The increasing numbers will or should make it better for the world at large.

The American Dental Society of Europe I attended in Paris. They had a two days' session only. But few were present, and they mostly Americans. As I before intimated, it is not recognized by the natives of England or on the continent. It is evidently kept up as a social affair. I do not think the natives should feel

too strongly towards them, for it is not done to keep out any one, no matter what his nationality. It is only a few of the natives who can travel the long distances and go to the expense, unless there could be a universal language. The many literary journals now sent to every hamlet fill largely the place of the dental society in countries where men cannot afford to travel. The illustrations and full proceedings of the principal societies in the large cities are so complete that men need not often leave their offices to know what is being done every month. Now and then clinics can be held that reinforce the mere description of difficult operations. To me it was very gratifying to meet dentists whom I had known through their writings and labors. Go where we will, each nation has its colony; socially, nothing is thought of it; professionally, they should be tolerated, if no insult is intended to the nation on whose ground they meet. It might be less objectionable to call themselves the Americo-European Dental Society. I saw as good operations in gold, amalgam, tin, tin and gold, oxyphosphate, and gutta-percha, in one mouth, in contour as well as flat surfaces, done by a German dentist as well as I could ask at the hands of any American dentist.

They did not do justice to the meeting, for there was such a rush to "do" the exposition and hurry back to their offices. The principal feature was the lantern exhibition of Professor Miller of his special work in bacteriology, which was very fine; but this can be really better studied when transferred to a journal and experiments are made in one's laboratories. The subject of gold and tin for filling was fully discussed, as it has been before, without new light from those who advocate it.

I was asked for my views as to the conservatism of filling-materials, and I had occasion for the first time to combat the views of Drs. Miller and Jenkins, who are the bulwarks of the gold and tin combination. This elicited from them the true reason why they use it so largely. 1st. Gold alone, in caries of any extent, is not only too expensive for the bulk of their patients, but they cannot afford to take the time necessary to pack in so much gold with the old methods and appliances they still use, and the patients will not put up with lengthy operations. Tin alone, while it will save, they admit, as well as the combination of gold and tin, yet, it will not stand mastication so well as the latter. 2d. In teaching at the Berlin University, the combination is almost exclusively taught over gold, for the reason that it can be more easily grasped by the average student than learning to manipulate gold by the old plan that has proven a failure.

Professor Miller and Dr. Jenkins were fair enough to say that they did not doubt my ability, with the instruments I used in clinic, especially the mechanical mallet, to do all I claimed in the use of gold; that it would perfectly preserve tooth-structure in just such cases as I advocated, as well as the combination, and more,—that perfect contour could be restored, and would resist mastication, which would be impossible with the combination. But, inasmuch as most of their operations are made flat faces with permanent separations and allowed to approach each other at the cervix, when caries does occur again it can more easily be repaired or renewed than if gold is used.

They further admitted that, with such an instrument as the mechanical mallet, with the points I am now using, it is possible to put in a large contour gold filling as quickly as when done with gold and tin. So that there is really nothing in the combination that cannot be done with gold alone, provided the operator has the ability to manipulate gold as easily and has our advantages of appliances. Then I could well understand that it was justifiable to use the combination if the patient had not the money, nor the time, nor the pride to submit, when there was a probability that gold would not last. When I placed in a large compound filling of gold at the University of Berlin, Professor Miller admitted it would take him as long to have done it with the gold and tin.

There was but one clinic given besides the one I gave in amalgam; because of an injury to my right index finger I could not make a gold filling. I found that my method of impacting amalgam with bibulous paper under heavy pressure was quite universally practised; but, strange to say, the true spirit of the procedure was not grasped. They mixed their amalgam too thin, and did not use as much pressure as would perfectly drive out the mercury. I found the same trouble in England, which arose from a misconception of the description given by Mr. Charles Tomes. My clinic soon convinced them that the amalgam, while it should not be squeezed dry, should be as stiff as could possibly be worked in the palm of the hand with the fingers.

To be satisfactory the meetings of the American Dental Society of Europe should never be less than three days. The social side was fully met by a splendid private entertainment given by Dr. Crane, and the banquet, which was on the Eiffel Tower, was unique and in every way a success.

I regretted to see so few of the French dentists and of the American dentists of Paris in the meetings. I think, if they would use

their efforts to form local societies throughout Europe, it would have a happier and more useful effect in drawing together men who would be glad, no doubt, to gain knowledge from any source. There is not enough new material every year that is worthy of exposure, and they should have a triennial meeting when the International Medical Congress meets in Europe. This would be quite often enough, unless it be for social and mutual admiration.

I was invited to clinic and lecture in Leipsic, Germany, but my stay was too limited. This school is very well fitted up, and commands quite a class, which is largely German. The students are not taught the use of gold for filling as we understand it, for they have not the appliances. They were very desirous of seeing me operate in gold and amalgam. In fact, wherever I went they were anxious to see how we do things in this country, and they had some curiosity to see how fast I could operate, and the reason why it could be done so much quicker than by their processes. I said they are not taught at the university any but the slower methods. While this is a fact, yet it need not be so, for my student, Dr. Paul Schwartz, of Leipsic, a graduate of the University of Pennsylvania, who is demonstrator in their Mechanical Department, is well capable of teaching them every minutia as he was taught here. He has necessarily met with opposition at his own home, as our system is so radically different; yet he persists in carrying out to the letter what he knows from the chances he had in witnessing so many of my private operations. In a short time, notwithstanding the chances are largely against our methods, with such men in their midst, great changes may be expected.

It is not that the European dentists do not wish to learn and adopt the very best system; but with them reform must come slowly, since they have not the means at their command in the shape of wealthy patients. Since it is an accepted fact that gold can be packed so quickly as to overcome the serious objection to its use of consuming much time without adequate pay, and that crown- and bridge-work can be made so profitable, as perfected in this country, they must adopt it very soon or fall far to the rear.

It remains for me now to speak of the First International Dental Congress, held in Paris, September 1, 1889. As the first experiment of an International Dental Congress it was a *grand success*; and considering the opposition given it both at home and in America, and England particularly, it was marvellous that it should have had so many delegates and attendants. It was not surprising that it should have met such staunch opposition. It was a serious ques-

tion whether such a step would not be sufficient ground to make the International Medical Congress, as well as the American Medical Association, refuse further to recognize us by a section in their meetings.

I am proud to have been one of its members, assembled to test whether we had the ability to stand alone. Its representation was equal to that of any congress held in Paris, and by men from every country in Europe; and even from America, where so much was done to make it a failure. As to enthusiasm, we had it from the moment the congress opened. The meetings were replete with interest and the rooms always full, notwithstanding the attractions of the Exposition and of the gayest capital of Europe.

The clinics were crowded to suffocation. Once I had to give up; the numbers were so great I was almost suffocated, so anxious were they to see everything done which was calculated to demonstrate the greatest advances of our art. Never before, on any occasion, did I see so many wild with delight at the sight of so much to carry to their homes. While the element was largely French, there was not such complete organization as could have been wished; yet, like everything done in Paris, on this their greatest *fête*, it was worthy of having been born on French soil.

It was just there where the congress should have had its birth. There, in conjunction with so much of the Old World, which needs to have had this at its own doors, we, who are ahead in the race as dentists, should have been glad of the opportunity of lending a helping hand by our presence and action. If dentistry needs the cultivation of art, with the science which has been achieved, it would be more apt to receive it from France; for surely she stands at the head of the world in all that is grand and beautiful in art and sculpture, and to aid such a people in our peculiar practical way would have not been lost to us. Besides, we need not feel that we are the only ones who have done anything for dentistry. When the French once get a start under their new Republican principles, we shall see an advance in every line that will startle us. Hence, I say, "Vive le First International Dental Congress," for the good work it did in arousing the dentists of Europe.

As to whether there should be a second congress is a matter to be discussed. Now that the physicians have given us a section, it is well we should hold to this, at least until we become so unwieldy a body that we shall have to stand alone. The advantages of our present association with medicine is surely something. To have

been recognized as worthy of the attachment to the main body, establishes the fact that we have done it for ourselves, and not that we are so much the gainers as they. The French will not have their pride touched should there not be another similar meeting anywhere else. They did a good thing, and they will feel and see its influence in the future, and there was not a man at their meetings who regrets he participated.

As to the social side of the congress, it was equal to anything to which I was ever invited. Their banquet as well as their private entertainments had an enthusiasm and spirit shown that would be well for us to imitate. They surely believe in enjoying life to the full.

The cases at the Exposition of cleft palate and various restorations of the face were the largest collection and finest I ever saw. In this work they excel. For some reason they have more of such operations than we have, and they lead us here. I saw one case in the private practice of Dr. Michaels where all of the superior maxilla to near the orbit of the eye, and as far up and back as possible to reach without involving the main arteries and the whole of the inferior jaw, had been completely removed by one of the celebrated French surgeons. It was a frightful case. I have here photographs of the woman before and after the restoration by Dr. Michaels, of Paris, who was successful in placing in not only a nose and upper lip, but a set of teeth for both jaws, so far as appearances go, but not for actual use, as it was impossible for him to take an impression. He had to fit the whole thing in by individual pieces. The appearance was all that could be asked, but it necessitated a great deal of trouble to remove the apparatus and cleanse it.¹

¹ In further justice to Dr. Michaels, I must mention his new style of gold or silver plates for artificial teeth, which was rather unique.

Clasped plates, as small as possible, are the rule on the continent; and, to enable the operator hastily to form a plate without getting up dies, he conceived the plan of having twenty-two-carat gold rolled into sections or blocks of one-sixteenth of an inch square, so that the blocks were held together by not being cut entirely through, leaving the plate very thin between each section. With a cloth, or the finger alone, this could be pressed on to the surface of the plaster cast and take its form quite perfectly. The clasps and teeth are now adjusted on to the cast, and the plate held down on the plaster cast with wire. Twenty-carat solder is run on the surface of the plate, which fills up between the blocks, and makes a solid plain surface and quite stiff. The plaster cast has as much sand mixed with it as is used in making the usual investment for soldering. For cheap and hasty work it is good. The great objection with me would be that, as I never solder the clasps to the plate from the plaster model

One very novel instrument that I saw was a pair of forceps, at one of the schools, invented by one of the professors. It was on the same principle as a monkey-wrench, with the regular jaws of forceps, which enabled the operator to hold the jaws or beaks in close contact with the tooth to be extracted, and there was no possibility of crushing the tooth, nor slipping off, from grasping too tightly.

Compressed air and electricity are playing quite a part in many of the offices in running all their machinery, and aiding in many ways to secure better results with less expenditure of force. My own clinics were in gold and amalgam filling, and the use of the articulator in making artificial teeth. It was a surprise to all to see perfectly smooth oval pluggers wiping in gold at the rate of one book and a half in forty-three minutes; also how it was possible to make Abby's old-fashioned gold foil adhere as perfectly as any of the most cohesive foil. Compared with the slow packing of gold this was to them a revolution, and they could well see and express the belief that it was now possible for them to begin to use gold as much as we do, and get results never before attained.

When I spoke before the congress of my articulator and its uses and the importance of the geometrical laws concerned in studying cases of irregularity, Dr. Davenport read the following, which I feel in justice to myself should be repeated:

"The long observation and study I have given the articulation of the teeth, with the hope of determining the laws governing their relations to each other and to the surrounding parts, anatomically, physiologically, and mechanically, enable me to appreciate with the keenest delight what Dr. Bonwill has so beautifully explained to us. He has expressed a most intense practicality in the very highest scientific terms.

"Those observers who object to ideal standards of comparison, and insist upon average conditions as the only safe basis, ought

on account of making an imperfect fit, I fit the plate to mouth first, then the clasps to teeth in the mouth, and while the plate is held in position I place plaster over the clasps and plate, and allow it to harden, and when removed from the mouth run into this plaster and sand and solder. This will always make perfect adjustment, and there will be no wear on the teeth and the clasp can be very loose. To do this with Dr. Michaels's plate, it would have to be soldered over its face first, and then the teeth and clasps afterwards. I saw this same thing at Louisville, Ky., in 1888, but made from fine twenty-two-carat wire gauze or netting, and the meshes afterwards filled in with solder. I think this would make a better adjustment. This is only intended for partial sets; it will not do for suction.

to close their mouths until the pure science first taught by Dr. Bonwill penetrates their ears, and their eyes have seen its practical results.

"As a profession we ought to confess to Dr. Bonwill our regret that the meaning of his words uttered thirty years ago are only now being comprehended by us. To-day, the profession, in reopening an old mine, has uncovered a priceless gem which once was thrown aside as worthless."

I had previously explained, on several occasions, to him and several scientific gentlemen whom he had invited to meet me, until he had become very thoroughly imbued with its importance, as the lines just read plainly indicate.

I do not know whether you will consider it any honor to you for your delegate to have had any special favors shown him at the congress; but, as it was done, and as no one else received a like ovation, and as it comes to you in the report of their own journals, you cannot doubt it. They could not have shown more consideration for any hero, and it was done unstintedly and on all occasions.

I trust there will be no misunderstanding of what I have said by any of my good friends on the "other side," for I have sedulously endeavored to impress my countrymen with the facts as I have received them. Something should be done to harmonize the status of dentistry in all parts of the world, so that each man can feel that there are no lines of nationality; that the sole aim is the greatest good to the greatest number. We must always expect more or less of contention, for the medical profession, after three thousand years, has the same to face everywhere. The native practitioner is always jealous and envious of the foreigner wherever he may be. We have it here, rampant, in every hamlet. The best way to eradicate it is to make ourselves competent, and so far above the competition as not to fear his inroads. This must lead the weaker one a step higher also.

As we appear to have so much in our hands that is calculated to advance the interests of dentistry, and make us all more akin throughout the world, I would advise that we do all we can to make of us a profession that knows no nationality, that every man, in whatever nation he may be born, educated, or may practise, should feel the assurance of being well received here, and that, when any of us go abroad to practise, we shall do nothing under the title of "American dentist."

DISCUSSION OF DR. E. P. WRIGHT'S PAPER ON "BLEACHING."

Dr. E. C. Kirk.—I feel that the thanks of the society are due to Dr. Wright for the trouble he has taken in coming to our meeting and giving us the valuable and practical points which he has presented in his paper. I am especially interested in one point he has made,—viz., the necessity for the complete removal of all fatty matter from the tooth-structure previous to the application of the bleaching agent. While I have not experienced great difficulty in restoring teeth of a bluish tint to a normal color, I have found—and I have no doubt that it is the common experience of all who have made the attempt—that it is well-nigh impossible to get satisfactory results in bleaching teeth which are of a dark yellow or brown tint; and this result obtains regardless of the agent or method employed, for, I think, I have tried them all. It may be—and indeed it seems likely from the experiment reported by Dr. Wright—that a complete removal of all fatty matter by the method he suggests, or one of a similar nature, may prove to be the solution of the difficulty in these obstinate cases.

A special point made by the speaker, and one which cannot be too strongly emphasized, is the necessity for continuing the treatment until the bleaching agent has penetrated to the ultimate ends of the dental tubuli, otherwise a recurrence of discoloration will result. With regard to the choice of use between dry chlorine and its aqueous solution, it is well to bear in mind that, in general, chlorine bleaches best in the presence of moisture. It does not act directly on the coloring matter, but indirectly, by virtue of its affinity for hydrogen. In the presence of moisture it seizes upon the hydrogen of the water molecule, liberating its oxygen, which in its nascent state is the active bleaching agent.

Dr. Head.—When the fatty matter is to be removed, is your cavity moist, or dry?

Dr. Wright.—I do not think it of much importance whether it is wet or dry. The obstruction to the passage of the chlorine water, from the centre to the periphery, must be removed. This I believe to be the fatty matter. The other day I took some hygrometric material, placed it around a tooth, exhausted the native air by the piston, and put in four or five drops of ether, which, with the loss, amounted to perhaps two drops, and by means of the chlorine the tooth was made beautiful and white. The apparatus which has been shown is simply a means of putting the tooth in a vacuum.

The most important part is the removal of the fatty matter; after this is done, pack your cavity with cotton saturated with distilled water, and with your syringe inject the chlorine gas, and you have chlorine water at work.

Dr. Head.—I know if you drop a dry tooth in ink it will be colored only on the outside; but if the tooth be previously wet with water, it will be colored through and through. I thought this might make some difference in the action of the chlorine.

Dr. Woodward.—Is the apical foramen open, or how do you fill it?

Dr. Wright.—At the apex I put gold to one-third the distance; then gutta-percha; scrape out as much dentine as the tooth will allow, and then proceed. Always scrape out a little more than you think is enough.

Dr. Sudduth.—Dr. Wright has given us clinically what I have demonstrated microscopically in the laboratory, and my observations coincide perfectly with his theory. The histology of the part, as I have demonstrated for fifteen years, shows that coloring-matter can be extended along the living fibres. On the other hand, I have taken a tooth and made a section of it, immediately following an inflammation of the pulp, and found a condition of fatty degeneration in the dentinal fibrillæ. When this is present the finest tincture will not succeed in coloring the periphery of the fibres; but when the fat is removed by ether, the staining shows to the very outside.

Dr. Truman.—I confess to being much interested in the paper and the remarks of Dr. Wright. I think his process marks an advance, and should be permanently brought forward, so that all may become familiar with it. I imagine very few here have a practical idea of its form or application. I have had so much to do with bringing this subject before the profession, and have had to combat so frequently unthinking prejudice, that I feel disinclined to say more upon it.

Like all other processes, it has had its period of origin and subsequent development, its time of crude ideas and more perfected modes; but the education of dental thought in this direction has not kept pace with improvements.

The professional mind is no more prepared to-day to believe that the bleaching of teeth is a part of operative dentistry than it was twenty-five years ago, when I first attempted to prove its importance. This is due, doubtless, to many reasons; but prominently to

the one fact that but few will observe the rules laid down for their government; and, consequently, the result does more harm than good, the process shouldering the responsibility of the failure. Hence I welcome an apparatus that eliminates, to a large degree, the personal equation.

The use of chlorine for bleaching is not new; indeed it is the oldest process; but its irritating effects made it impossible to use. Dr. Wright's apparatus overcomes this entirely, and hence my reason for some degree of faith in it. I have not seen it in operation but in one case, and that was one of the worst possible. This came into my hands for treatment after it had been tried by some inexperienced operator. I found it entirely black. Suspecting the cause of this, I proceeded to bleach in the usual way, and soon returned the tooth to a deep yellow tinge. This the patient reported as the original shade. Satisfied that this color could not be changed, I handed the case to a professional friend to try his plan. This resulted the same way. Dr. Wright, happening in the city at the time, made a fourth attempt, and the temporary result was remarkable; but, unfortunately, it failed as the others had done. This case is cited in detail not to antagonize the process, but to emphasize the difficulties that must surround all attempts at bleaching, and the importance of giving more attention to it. We have yet to learn whether speedy bleaching by Dr. Wright's process will be as lasting as by slower modes. If this proves to be the case, then there is no question but that we have in this plan a more effective mode than has heretofore been brought to the notice of the profession, and one that is, at the same time, so easily applied and is so positive in its action, that it would seem to have a future of usefulness before it. I, however, do not believe it or any other process will change the yellow color of teeth. These constitute but a small proportion, the blue predominating.

Dr. Jameson.—Can one-half or one-third be bleached?

Dr. Wright.—More.

Dr. Tees.—How often is the apparatus used before the bleaching is done?

Dr. Wright.—Only once.

Dr. Tees.—How about the tooth of which Dr. Truman spoke?

Dr. Wright.—As I said before, there are some teeth that cannot be bleached; and I think the doctor admitted that this particular tooth had resisted all other efforts to bleach it. But I find that ninety-five per cent. of all teeth may be bleached.

Dr. Tees.—Will these ninety-five per cent. remain white long?

Dr. Wright.—I can show you cases that have been bleached more than eighteen months, and they are just as white now as when first done.

Subject passed.

INCIDENTS OF PRACTICE.

Dr. Place.—A young lady came to me suffering periodically with severe pain through the nerve which supplies the first and second lower bicuspid on the right side. She had been suffering for over a week. It comes every half-hour or fifteen minutes, and lasts five or ten minutes. While it lasts it is exoruciating. A careful examination of the mouth showed the wisdom-tooth and second molar in place, the sixth-year molar having been extracted years ago. In the wisdom-tooth as well as the twelfth-year molar there were large amalgam fillings. The bicuspid teeth are entirely sound, with no sign of decay between them. I took an instrument and tapped it lightly on the wisdom-tooth, also on the twelfth-year molar, and in neither could I get a response. As soon as I tapped the second bicuspid she felt a slight pain. I applied the rubber dam on the wisdom-tooth, to see if the nerve was alive, and found it was; likewise that in the twelfth-year molar and that in the bicuspid,—all alive. I hardly knew what course of treatment was indicated. I applied to the gums arsenic and aconite, and she is now under the care of a physician, who, I suppose, is treating her with quinine. If there is better treatment I would like to use it. By pressing on the nerve at the mental foramen, there is a tendency to relieve the pain. It was used several times when the pain was very severe, which gave temporary relief.

Dr. James Truman.—Are the teeth very dense? If so, there might be granular deposits in the pulp. I think I should drill into one of these bicuspids.

Dr. Bassett.—Is it not possible that this trouble comes from the wisdom-tooth,—from the amalgam filling? The trouble might be reflected forward into the bicuspid. I have seen one or two cases where this has been the result, and it may be so with this case.

Dr. Kirk.—I think the fact of cold relieving the bicuspid precludes the idea of the trouble arising from pulp granules.

Dr. Guilford.—As there are several points in Dr. Bonwill's paper about which I should like to speak, and which I think others here would like to discuss, I move that the discussion be postponed until our next meeting, owing to the lateness of the hour. Carried.

The meeting then adjourned.

NEW JERSEY STATE DENTAL SOCIETY.—(Concluded.)

Wednesday, July 19, 1889.—Evening Session.

THE roll was called, forty-two members present.

Dr. Watkins, chairman of the Executive Committee, reported that that committee had agreed to make an assessment upon members, for the purpose of defraying the expense of publishing the proceedings of the society for the first five years of its existence. Also, that, as Dr. Sudduth has offered to reprint, free of cost, one hundred and fifty copies of the proceedings of the society, the INTERNATIONAL DENTAL JOURNAL be made the official organ of the society for this year.

On motion the report was received.

Dr. G. Carleton Brown.—Mr. President, in regard to the assessment ordered at the last meeting and made by the Executive Committee, I would state that it has been found necessary to make this assessment larger than usual,—four dollars. There are five years' proceedings included in this publication, and it brings the literature of the society up to date. The expense has been met by the officers of the society; and we would now ask that the members of the society make this good to them by the prompt payment of their dues and assessments.

Elbert T. Davis, D.D.S., of Bridgeton, was proposed for active membership; endorsed by Drs. Richards and Meeker. Also Dr. A. Westlake, of Elizabeth, endorsed by Drs. Levy and G. Carleton Brown.

The nominations were ordered to take the usual course.

The secretary announced that he had received the credentials of Dr. L. Ashley Faught as a delegate from the Philadelphia County Dental Society, of Pennsylvania.

Dr. Wm. H. Dwinelle, of New York, read a paper on the treatment of teeth during pregnancy. (See page 65.)

DISCUSSION OF DR. DWINELLE'S PAPER ON "TREATMENT OF THE
TEETH DURING PREGNANCY."

Dr. E. T. Darby.—Mr. President, there is very much of truth in what Dr. Dwinelle has read to us this evening. We all know that the period of pregnancy is one peculiarly trying upon a woman.

We also know that during the period of pregnancy the nervous system is wrought up to its highest tension. We know that at this period there is often a demand in the system for lime salts. This has been illustrated in various ways, as by the mother craving at such times food that contains the phosphates in abundance. I think my friend, Dr. Kirk, some years ago read a paper upon this subject, stating for illustration several cases in which the women during this period had craved lime to such an extent that they had even eaten mortar and lime from the boxes in the street. I have known instances of pregnant women who ate plaster from the houses, and also ate chalk in large quantities. This seems proof positive that there was in the system a craving for lime. It has been questioned by many scientific men, and by men in our own profession, whether any change takes place in the teeth in consequence of the introduction of lime salts into the system. I have heard Professor Black say that a tooth once soft is always soft; that no change takes place in that tooth by the introduction of lime salts into the system. I differ very materially from Dr. Black upon this point, because I am positive that I have seen changes take place in teeth for the better; teeth that were soft in early life becoming hard and good later in life. I have also seen in my own practice cases where a diet composed largely of phosphates was introduced, where the diet had been of a very different character, containing little phosphates, and the teeth being in bad condition; and the favorable results upon the teeth following that change in diet were truly wonderful. I think it was Ben Jonson who said that the oatmeal of Scotland had made good men in England, as it had made good horses. I think if we could introduce into the system of women during the period of gestation a greater proportion of the phosphates in their food, there would be a great improvement in the teeth of their children. But, unfortunately, these pregnant women do not take to oatmeal and brown bread and such things, but more frequently crave those things which Dr. Dwinelle says are inert in the system, such as lime, which is not assimilated. In the treatment of the teeth of pregnant women I think we sometimes insist upon too radical treatment, trying to perform operations which we ought not to perform under those conditions. My own practice has been, during the period of pregnancy, to fill the teeth with plastics only, as much as possible avoiding large operations and the use of metallic substances. It is not, in acid conditions, perhaps the best thing to use oxyphosphate or oxychloride; gutta-percha is preferable, because the secretions are intensely acid at that time. If we

would perform only temporary operations during the period of gestation the results would be more satisfactory.

I have in my practice a patient whose teeth I have had the care of from the time she was five or six years old. She has been married about five years, and has had three children. Previous to her marriage she had very little dentistry to do, her teeth being of unusually good character. I saw her a few weeks ago, and her teeth were in wretched condition. During these three pregnancies she has not had time, or has not been in condition, to give her teeth the attention she did previously, and the ravages of decay have been alarming. It is unquestionably the result of her frequently renewed pregnancy.

It is very difficult to know just what is the best treatment in these conditions. It has been asserted that the system of the woman is drawn upon at this period for an unusual quantity of lime salts to build up the teeth of the fœtus, and that the introduction of phosphates would be beneficial.

Dr. Littig.—Is it the phosphate or phosphite that we want?

Dr. Darby.—I have been under the impression that it was the phosphate.

Dr. Littig.—I think it is the phosphate that the system throws off, and the phosphite is used up by the addition of oxygen. When we have the phosphate, which has an atom of phosphorus and an atom of oxygen, they take on another atom of oxygen and we have the phosphite. The phosphite has three atoms of oxygen and one of phosphorus. The phosphate has five atoms of oxygen. As nature uses the phosphite, oxygen is added until it takes on its full equivalent of oxygen, and then it becomes a phosphate, and nature throws it off. Am I right?

Dr. Darby.—I cannot say whether you are chemically correct or not.

Dr. Littig.—I think the craving for chalk and lime is simply on account of the acid condition. The acidity is corrected by taking the lime, but it does not really enter into the system. I have an idea that the thing needed is the phosphite, which is in the grain; because, if I wanted to raise a plant I would put phosphate on it. The plant, in its growth, takes up one atom of oxygen and another atom of oxygen until it makes up the phosphate and leaves the phosphite in the grain. I believe it is the phosphite we want and not the phosphate; that the phosphate is inert all the way through. I do not pretend to be a chemist, but that seems to be the natural condition of things.

Dr. Darby.—I have in mind a case of a woman whose teeth were going very rapidly during her pregnancy. I said to her physician one day, "This lady's teeth are decaying very rapidly; what is your opinion in regard to the use of hypophosphites?" He said, "I have a very good opinion of them, and, if you agree with me, I will prescribe them for her." He put her upon cod-liver oil and hypophosphites; and he seemed to think she was very much better physically, and I do not know but that her teeth were very much improved by that treatment.

Dr. Littig.—I believe that if you could get phosphite and keep it pure it would be beneficial; but as soon as you open any article that contains phosphite, the introduction of oxygen disrupts it and you have the phosphate again; so it is of very little service after it has been opened for any length of time.

Dr. Kirk.—Does Dr. Littig understand that the phosphoric compounds to be appropriated by the organism must be necessarily in the form of phosphites and not phosphates?

Dr. Littig.—I think it is the phosphites.

Dr. Kirk.—I think that is incorrect. In the outer shell of the wheat, I think, you will find the lime salts exist as phosphates as well as phosphites. It is a very interesting point that Dr. Littig has raised, as to whether the phosphates in the system are produced by oxidation of the phosphites taken in as food; but I do not think there is any evidence to disprove that the phosphates, as they exist in the various articles of food when taken into the system, are directly appropriated. It is quite a new thought to me, this question, in regard to the assimilation of phosphates. I have always believed that the phosphates, as they exist in the grain or muscle or bony tissue taken as food, are directly appropriated by the organism they are taken into.

Dr. Littig.—I would not undertake to dispute Dr. Kirk on a question of chemistry. But I wish he would look into this subject; perhaps he will find I am a little nearer right than he thinks.

Dr. Kirk.—In relation to Dr. Dwinelle's paper, there are a number of points in it that have been intensely interesting to me for many years. One is the question of whether the tooth-structure in the mother deteriorates during pregnancy, or whether the caries that runs riot during the period of gestation is produced by conditions dependent upon the local production of acids. I have always believed, and shall continue to believe as long as I have a tactile sense sufficiently delicate to distinguish between hard and soft

dentine, that the tooth-structure during pregnancy softens. At the same time there is, apparently, an acid condition of the secretions, brought about by changes in the systemic condition of the patient during that time. I have in mind the case of a lady that came to me about the time of her marriage, her teeth then being in nearly perfect condition. She has since then given birth to a child almost annually for the past four or five years; and the result is excessive erosion of the surfaces of all the teeth anterior to the molars, on their labial and buccal aspects. It has been almost impossible to prevent this destruction of the tooth substance; and I told her she would have to choose between having babies or teeth, as she could not have both. I want to say that, in my opinion, the habit that many women have of giving birth to a baby once a year is a very bad one, and, from the stand-point of dental prophylaxis alone, ought to be corrected.

Dr. Dwinelle.—I hope the doctor will give us a remedy.

Dr. Kirk.—If there is any one who absolutely needs a remedy, I will give it to him.

Dr. W. S. Elliott.—The subject before us is one of considerable interest. The paper suggests this thought,—that the desire for an antacid lies with the oxide of calcium; from which we could presume that it was oxide of calcium, or common lime, that the patient needed. But I think, as the gentleman from New York has said, that it is more to correct the acid condition that the system demands lime; because we know that common lime is nothing more than oxide of calcium, and is not assimilable as such.

As regards the difference between the bone phosphates and the inert phosphates of the rocks, I do not know what the chemical difference is. I do not believe there is really any difference from this point of consideration,—that all the lime of the earth, as naturalists understand it, has at one time been part of the living animal; that all the lime of the earth has really been in solution in the sea, and has been appropriated by animal life and then deposited in the rocks. Therefore it has been vitalized. Whether the lapse of ages has deprived it of that vitality or not is a question I could not answer; but it is generally understood that all lime has once been vitalized by passing through a vital medium. I believe the element which the system really requires in the condition of pregnancy is that of the hypophosphites. As far as the grain is concerned, there is a difference between the outer hull, or husk, and that layer which lies between the centre and the husk, and which contains more of the phosphites than the outer shell; and it is the phosphites of the

kernel which is appropriated by the system, and not the phosphate.

Dr. Dwinelle.—In regard to the comparative potency of animal phosphates and phosphates derived from the rocks, we have a splendid illustration in medico-legal history, as derived from a great fact that was brought to light in England many years ago. I can not recall the names to enforce what I am about to say. We will assume that there was once upon a time a certain Jaynes's powder, that was very potent and efficacious in curing the malignant malarious fevers of the extreme East, where England had her armies by hundreds of thousands. Annually there broke out in that region occupied by the English troops this malignant fever, which devastated the army more than battles, unless they had a quantity of Jaynes's powder to combat it and allay its ravages. Jaynes's powder was a potent and effective remedy. Thus matters went on until, in the course of time, many generations perhaps, the Jayneses became immensely rich; with riches came education, intelligence, and refinement; and in course of time there was an appeal put by the country at large to have made known the components of this powder, which was a secret up to that time; there was an appeal to the generosity, intelligence, and fairness of the manufacturers of this powder to make known the secret of its preparation. "Certainly, gentlemen," said they to the committee, "we have for a long period of time derived great advantage, wealth, and power from it, and it is no more than reasonable that we should do as you request; we ought to have done it long ago; we have not the right to keep a process secret which belongs to humanity." So they published the recipe to the world; whereupon there were bids made immediately for supplying Jaynes's powder for the East. Among others Jaynes was one of the bidders, but he was underbid by one Jones, and Jones got the contract. Jaynes came forward and said to Jones, "I congratulate you; all of my apparatus and plant, my factories, my stock, my experts, and my men are at your service." The offer was accepted, on certain terms, and Jones went to work to make the Jaynes powder, seeing great success and immense wealth before him. But his dream was soon ended. The fever broke out as usual, and the Jaynes-Jones powder was administered as before, but it had no effect, it was wholly inert, and the soldiers and others died like sheep with the rot. The result was alarming; the army was rapidly reduced, and the whole mother country was stirred to desperation by the terrible intelligence that came to them from the East. The matter was brought before Parliament, and

an investigation was made. Jaynes came forward and rendered every assistance that he could in the premises, as did others. Jones was confounded. The old Jaynes experts were put upon the witness-stand, and questioned closely in reference to any difference between the two recipes, and they declared them to be the same; each contained so much phosphate of lime, and so much of this, that, and the other. They were confounded, and the inquiry arose, What shall we do to be saved? The investigation went on day after day. The old experts were put upon the stand again and again; each time they declared that the materials used by Jones were precisely the same in nature and in quantity as those which had been used by Jaynes. Finally the counsel in the case said, "You say that Jaynes's powder contained so much phosphate of lime?" "Yes, sir." "And you say that Jones's powder contains precisely the same quantity of the same material?" "Yes, sir." "Where did Jaynes get his phosphate of lime?" "Why, from the bones of animals." "Where did Jones get his?" "He got his from the phosphate rocks; but they are precisely the same, chemically." The counsel sprang to his feet and cried, "Eureka! I have found it."

"In the beginning a nebulous sphere, containing all of the elements, millions of miles in diameter, transparent as ether, was floating in space. Suddenly, through the potency of electric force, this immense area was condensed into the circumference of a few thousand miles, and hurled into its prescribed orbit in the form of a ball of fire.

"From the elements, air and water took their appropriate place, upheavals forced elemental rocks above the surface, separating land from sea,—among them the phosphate rocks.

"It took the phosphate rock unnumbered millions of ages—passing through the alembic of nature's laboratory, through the stomach of myriads of animals, through an infinite and ever-advancing vegetation, devoured and digested by animals, through the cold-blooded range, ever evolving still higher and higher, up through the varied types of the warm-blooded mammalia—before its primitive and inert condition had become so far *animalized* and *spiritualized* that it would be acceptable as a pap, a pabulum to be assimilated with the human economy in the form of phosphates derived from the bones of animals.

"Phosphate of lime derived from the phosphate rock has no affinity with our animal economy; it is wholly inert, fatally inert, as proven by the unhappy experience of the Joneses in India, and established by this court of inquiry. The phosphate of lime ob-

tained from the bones of the mammalia, through the mysterious processes of untold ages, readily assimilates with our elemental humanity, and is potent to save, as proven by the record of the honored Jayneses for generations past, all of which has been amply verified by this long and laborious investigation.

"The great lesson of this hour of our solemn victory bids us take heed that we recognize the fact that we live in an age where subtle, potent, and hitherto unknown elements and conditions challenge our recognition."

In the course of time Jones adopted the formula of Jaynes, and his powders were potent ever after.

At the time of the great fatality in India, some of the original Jaynes powder, that had been left over from the supply of the year before, was found, which, when administered to the sick, insured their recovery. This fact, at the time, gave additional perplexity to the problem, which in the end was so satisfactorily solved.

Friday, July 19, 1889.—Afternoon Session.

The President, Dr. Henry A. Hull, in the chair.

The calling of the roll was dispensed with.

The report of the Board of Examiners was read.

The Board of Examiners respectfully submit the following :

We have carefully considered the recommendation of the National Association of Dental Examiners, and fully endorse their action in omitting the name of the *University of Maryland, Dental Department*, from the list of reputable colleges whose diplomas might be accepted instead of an examination, being fully convinced that they have not required a preliminary examination before matriculation, contrary to the rules required by this board and recommended by the National Association of Dental Examiners.

We have also decided to forward the evidence taken in the case to the National Association of Dental Examiners, and, before proceeding further, to await their action, as we understand from the dean of the Maryland University, Dental Department, that he hopes to have the college admitted to the National Association of Dental Faculties, and to comply with the rules and regulations governing that association and approved of by the National Association of Dental Examiners.

We also *fully* endorse the action of our representative at the Louisville meeting, August, 1888.

J. HAYHURST,	} <i>Board of Examiners.</i>
FRED. A. LEVY,	
JAMES G. PALMER,	
A. R. EATON,	

July 19, 1889.

Report adopted.

The Board of Examiners having reported favorably upon the application for membership of Dr. J. F. Lomas, of Bridgeton, a ballot was ordered, and Dr. Lomas was duly elected.

The Committee on President's Address reported as follows:

We heartily commend the excellent address of our president, and hope all will carefully read it when it shall have been published. But, as there is no special recommendation in it, we have no other report to make concerning it.

JAMES G. PALMER,	} <i>Committee.</i>
C. S. STOCKTON,	
GEO. E. ADAMS,	

The amendment to the by-laws, making the dues of members three dollars a year, offered at the morning session, was taken up and adopted.

Dr. Luckey, chairman of the Committee on Dental Medicine, read a report, as follows:

So far as your committee has been able to learn, the past year has not been one of remarkable activity in therapeutic progress. Whilst nearly all dentists feel the need of a better understanding of the action of drugs, they have been devoting their time to the development of those already known rather than to experimenting with new ones. A good deal of time and thought has been given to cocaine, but to-day its position in the dental pharmacopœia is not materially altered from what it occupied a year ago. Iodoform is still a sheet-anchor with many, and its wonderful properties are often called into requisition for the benefit of sufferers and the gratification of operators. Iodol, the twin brother of iodoform, is being quietly but effectively used; while some have dropped both and have gone back to the old-time favorite in the treatment of pulpless and abscessed teeth,—iodide of creosote.

There seems to be a constant and not altogether unnatural

tendency among practitioners for change. After a long series of successful cases with a medicine that has proved a faithful servant, an unsuccessful case or a series of them persuades the operator that something else is needed, and forthwith a new remedy is called in.

The discovery of new remedies does not always imply progress, but the development of the properties of those already known to their highest and fullest possibilities, the discovery of their proper combination with other remedies, and the knowledge of the classes of cases upon which they may be used to as near a certainty as possible, does signify progress of a most satisfactory kind. The time was when many dentists thought that medicated cotton or other material was the proper thing for root-fillings, but progress has been indicated by the abandonment of such practice and the recognition of the fact that medicines are used to obtain a certain effect, and when that point has been reached it is time at once to discard the medicament and insert into the root some material destitute of active properties,—in other words, something inert. The point of cure has been reached. All that the tissues need is rest; and if allowed that rest, they will probably remain quiet and healthy; but the continued presence of any medicinal agent capable of correcting an abnormal state is likely to result eventually in a return of the very conditions which it was used to and did correct. Make a cure when possible, but then cease the use of medicines.

Listerine is growing more and more in favor. The experience of the chairman of your committee with it is very gratifying. As a wash in the treatment of pulpless teeth, during the process of removing the *débris* from the canal, it is unsurpassed; as a mouth-wash during the removal of tartar it is not only gratifying to the patient, but is also an excellent application for the gums. Its most useful and particular sphere, however, seems to be as a general mouth-wash in those cases where the teeth are soft, with white rings appearing at the cervical margins. These are the cases that above all others seem most discouraging to the operator, being apparently ready to soften on all surfaces and break down; where the only real remedy to stop decay is apparently the application of a gold crown to keep the oral fluids from the teeth and thus preserve them. Here listerine seems to be the very thing we need. Marked improvement has been observed in such cases after a six-months' course of treatment, and in a year all signs of softening have disappeared and the teeth appear strong and healthy. It is used in the strength of a teaspoonful to a half-glass of water, night and morning.

The rage for immediate root-filling still continues, and a word of

warning in regard to this matter may not be out of place. If there are any cases that require our careful attention and the use of medicines, it is the treatment of pulpless or abscessed teeth. It may be justifiable to fill immediately the roots of a tooth the pulp of which has been recently destroyed or has died, or in cases where a fistulous opening exists; but in those cases where pus or other fluid exudates have no escape, the comfort of the patient and the successful issue of the case is jeopardized by immediate filling. Take a little time; insert your medicinal agent; give it a week at least to perform its work. If inflammation and swelling supervene,—not at all improbable in any case of long standing,—it is easy to reopen the tooth and search for the seat of the trouble. When everything is comfortable, fill the root, insert a temporary stopping in the cavity, and let the case rest another week, when, if the tooth is comfortable, it is perfectly safe to fill permanently. This method of procedure is much safer than the “rushing process,” and may prevent the operator from having the mortification of undoing what to him seems a pretty piece of work. In this connection it is well to call attention to the fact that where inflammation appears in cases in which there is no fistulous opening, the use of the lance as a remedy is often very gratifying. Cut through the gum and process to the end of the root, including also the pericementum, and cut it from the apex fully one-half or more the length of the root. In many cases this is all that is required.

The care and treatment of pulpless teeth forms a large part of the practice of many dentists; and if a mistake is made in the treatment, no one can tell what disastrous consequences may follow. The immediate-root-filler may not hear of the subsequent result for a long time, but at last the word is likely to reach him that the tooth he has fondly imagined as successfully treated and saved has been extracted by some other dentist to afford relief to the afflicted patient.

A bad or unsuccessful result following immediate root-filling has a tendency to weaken the confidence of the public in such operations and operators; and many valuable teeth will be lost through dread from the failure of a few such hastily-performed operations. This warning is not uttered to impede progress, but to point out and emphasize some of the dangers that lie in the path of immediate-root-fillers.

The thing needed is a thorough understanding of the therapeutic value of the remedies we use, conjoined with the same understanding of the pathological and physiological condition of the

tissues and parts we operate upon. Then, with a clear judgment to guide us, the outcome of any given case is not very doubtful.

Dr. Watkins.—Mr. President, Dr. Adair's paper is in the hands of the secretary. Its title is "Treatment of Very Sensitive Teeth when Pulps are nearly exposed."

On motion of Dr. Meeker, Dr. Adair's paper was read by title.

On motion of Dr. Meeker, Dr. Land's paper was read by title; Dr. Land not being present. Subject, "The Scientific Adaptation of Artificial Dentures."

On motion of Dr. Meeker, Dr. F. M. Odell's paper was read by title.

The officers-elect for the ensuing year were here formerly installed.

President Watkins takes the chair.

Dr. Waters.—Mr. President, I want to take this opportunity to thank the New Jersey State Dental Society for the very pleasant time, both intellectually and socially, which I have enjoyed at this meeting. I also desire to compliment this society upon the harmonious action I have observed in all its work. I have been particularly struck with your way of managing an election of officers. There was a good-fellowship and harmony through it all that I like to see. I have been in societies where there was a good deal of pulling and hauling on such occasions; I am glad to see that in the New Jersey State Dental Society that does not exist.

A vote of thanks was tendered to the gentlemen who read papers; to the visitors from a distance who came to take part in the discussion; to the exhibitors of dental appliances for their fine exhibits of things useful to the profession; and to the proprietors of the West End Hotel for courtesies extended.

Adjourned *sine die*.

CLINICS.

Dr. C. C. Carroll, of New York, filled the root of a pulpless tooth with an aluminium pin, which subserves the purposes of perfectly stopping the root and making a retainer for the subsequent crown filling. In the next sitting the tooth filling will be finished with aluminium foil, which is claimed to be a superior tooth-saving material.

Dr. W. H. Pomeroy, of Gloucester, Mass., showed his method of condensing gold, which has grown out of experiments with the Herbst method; using the Pomeroy engine mallet, and soft gold,

without annealing; the points used being smooth, and flattened on the end.

Dr. Pomeroy claims that his method of packing foil with flat points, combining the burnishing idea of Herbst with the mallet blow makes a filling more solid, and more like a gold ingot, than any other method, and that teeth can be filled as rapidly in that way as by the Herbst method.

Dr. Wm. E. Truex, of Freehold, filled with gold a crown cavity in a molar tooth.

Dr. J. W. Canaday, of Albany, N. Y., filled a left superior second molar, grinding surface, with a combination of tin and gold, a sheet of No. 4 gold and a sheet of No. 4 tin being folded together in such a way that the tin is completely enclosed by the gold. The combined material is used as soft gold would be, being burnished on as in the Herbst method.

Dr. Reading, of Lambertville, filled with crystal gold, and without separation, an approximal cavity in a central incisor; the operation occupying five minutes.

Dr. J. Marion Edmunds, of New York, filled a very large cavity in a left superior second molar, with hand pressure, using only the foil-carriers, and finishing with a plugger and burnisher; packing the gold so thoroughly that it could not be further condensed with the mallet. The gold used was crystalloid.

Dr. C. A. Timme, of New York, filled an approximal cavity in a superior second bicuspid with Wolrab's gold, in the mouth of Dr. Adelberg, using the Herbst burnishing method.

Dr. Kimball put in a cement filling, and demonstrated his method of lining cavities, where the pulp is nearly exposed.

Dr. Edward J. King, of Boonton, N. J., presented a very interesting case,—the removal of a fibrous tumor from a lad of seventeen, the operation having been performed by Dr. J. G. Ryerson. The tumor had distended the cheek very much, and after its removal a decided deformity presented, which was successfully remedied by Dr. King, by an ingenious piece of crown- and bridge-work. The description of the removal of tumor is not necessary here, and we regret we are unable to illustrate the case, as by that means alone could a correct idea be formed.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE American Academy of Dental Science held its regular monthly meeting December 4, 1889, in the Boston Medical Library Association rooms, President Seabury in the chair.

President Seabury.—Gentlemen, I will now introduce to you Dr. D. W. Fellows, of Portland, Me., who will read a paper on "Fracture of the Jaws."

Dr. Fellows.—I feel considerably abashed before a body of men like this; but such as I have I will give you very briefly. (The paper will be found on page 77).

There are one or two points which I have not touched upon in this paper. One is, the time for inserting the splint. I should say, as soon as possible, but in many cases the swelling would be so great that it would not be well to attempt it for a few days. In the cases I referred to it was inserted in about a week; I think six days. It may be done any time during the preparatory stages, any time within a week, if the circumstances are such that it cannot well be done before, or, in fact, any time before union takes place.

DISCUSSION OF DR. D. W. FELLOWS'S PAPER ON "FRACTURE OF THE JAWS."

Dr. Fillebrown.—I suggest that matters of detail are oftentimes quite as interesting as principles, and I think that the detail of making the splint would be interesting. Not long since I saw a splint that was made for a patient with a fractured under jaw, and the splint was so large that it allowed nearly the full play of the displacement, so that there was but little gained over the condition which would have existed had there been no splint at all. I inquired into the matter, and I found that tin foil, tolerably thick, was moulded over the teeth of the models and wax added to that for the thickness. Then the models were removed from the pattern and the pattern inserted into the flask, the plaster poured into that, and the splint made from the pattern instead of from the model itself. In consequence of the ill-adjustment of the tin foil in making the pattern the splint was loose, as I remarked, and the displacement of the parts allowed. Now, if I understand Dr. Fellows, he used the models themselves on which to make the splint, and by that means he got a more perfect fit. It has always seemed to me in making splints that it might be reasonable to put a coating of thin tin foil over the teeth of the model, and thereby insure clean work,

just about enough enlargement to allow it to go easily on the teeth, and still fit closely enough to prevent displacement of the parts. I would not have thought this worth speaking of had I not seen within the year past the very condition which I have alluded to, and I know the patient was in that case very much worse off for the splint's having been made in that way.

The first case Dr. Fellows reports here to-night, that of the merchant of Portland, I was quite well acquainted with. I did not see the case at the time of the accident, but I have seen the gentleman since, and certainly it was a bad smash-up. He fell a considerable distance,—I understood it was from the steps of the cars, but it seems I am mistaken,—and, striking with full force on the face, both jaws were badly fractured. After the treatment no one would know that so severe an accident had happened to any parts about the face.

Dr. Andrews.—I have had a case that the paper brings to my mind. It was that of a gentleman connected with Harvard University, who, in trying to stop a vicious, runaway horse, received a kick, which broke his lower jaw, about an inch to the left of the symphysis. Besides the fracture there was a loose, V-shaped piece of the jaw containing three teeth, the cuspid and two bicuspid, I think. A few days after the accident the patient was brought to me by his physician to have a splint made to keep the jaw and teeth in place. The patient having a close-cut beard, we thought it best to cover this with a piece of damp cotton cloth, which was tied round the head like a bandage, one object being to keep the jaws together, and make as perfect an articulation with the upper teeth as possible; another, to prevent the modelling composition from clinging to the beard. A piece of sheet tin, such as we make air-chambers of, was then rudely fashioned to the form of the lower jaw, after which modelling composition was heated, placed in this tin form, carried up in place, and allowed to cool about the jaw. Another bandage was then tied outside of this and over the head. We found that the patient could open the mouth to allow an impression to be made of the teeth, after we had tied the loosened teeth to the firm ones. From the impression a splint of vulcanized rubber was made covering the teeth. In three weeks the splint was removed and the jaw found to be united, the articulation being nearly perfect.

Dr. Williams.—I would like to ask Dr. Andrews if he would consider the modelling composition preferable to plaster of Paris?

Dr. Andrews.—In this case it worked quite as well, and was

found to be much more convenient. I would say that the plate held the jaw so well in place that the outer splint of impression material was soon removed. The only thing being used on the outside was a simple bandage.

Dr. Smith.—I was called in consultation with a surgeon some time ago to assist him in holding a double fracture of the lower jaw that the surgeons of the Massachusetts General Hospital had treated unsuccessfully with their usual process of wiring teeth together. The case was that of a gentleman who had been thrown from a carriage, and, like the person whom Dr. Fellows spoke of, he was badly smashed up. Not only was the jaw fractured at the right and left of the symphysis, but the soft parts of the face, especially about the neck, were severely lacerated. The usual procedure of using the interdental splint with a bandage passing under the chin and over the head was prohibited on account of the severe inflammation of the soft parts, producing two sinuses, in which the surgeon had placed tubes for the discharge of pus. I was not called until late in the case, and I found the parts so swollen that it was impossible to take a full impression at once of the jaw. So I took the impression of the lower jaw in three sections by taking modelling compound and using my forefinger as a cup. From these impressions casts were made and put together. A die was then constructed, and on that was struck up a very stiff gold splint going inside of the teeth and over the crowns, but not over the outside. Through this splint, and corresponding to the spaces between the teeth, holes were made, through which passed platinum wire to serve as ligatures in securely fixing the splint in position. Everything being in readiness, the fractures were adjusted, the splint applied and firmly fastened—by means of the platinum ligature—to the teeth. The patient wore the splint some twelve weeks with perfect comfort, and the results were satisfactory to both surgeon and patient.

Dr. Baker.—About two years ago a case of fractured jaw came into my hands. A gentleman from this city was travelling through the West. I do not know the exact details of the injury, but was told that he was riding a bicycle, and fell from it on to the sidewalk. The result was two fractures of the lower jaw, one in the vicinity of the condyle on the left side, the other just back of the mental foramen on the right side. Travelling as he was, he could not, of course, remain in any one place for treatment, and therefore went to several different practitioners for aid. One of the dentists whom he consulted made for him an interdental splint, and it was correctly named, but that was all that there was correct about it.

When he came to me, he said he thought he had not been properly treated, and also said, when he reached Chicago, he was in hopes of receiving proper care, and went immediately to Dr. Harland. On learning that he could not remain in Chicago a suitable length of time, Dr. Harland referred him to me. Upon examination, I found a cartilaginous union on the right side. After removing the splint, the articulation was seen to be fairly good on the left side, while on the right there was a space large enough to place a thumb between the upper and lower teeth in the vicinity of the bicuspid. The right inferior second bicuspid and first molar were badly fractured, and the right superior central badly out of position and loose. The pulps of all these teeth were dead, and there was also a discharging fistula under the chin, with considerable necrosis.

The treatment I pursued was as follows: Knowing that several weeks would elapse before the case could be cured, I advised my patient to procure a room at the hospital, and I called to my assistance a celebrated surgeon. We etherized the patient, after which we found that, by exerting considerable force, we could spring the jaw into its proper position.

After removing the necrosed bone, we placed upon the chin a soft pad of cotton, then over this a plaster splint, and finally passed a linen bandage over the head and under the chin, covering the plaster, and drew it tight enough to hold the jaw in its normal position.

The patient was easily fed through the space made by the fracture of the bicuspid and molar. After about three weeks the bandages were removed, and the jaw was found to keep its position so well that it was unnecessary to use the metal shield which had been prepared. The patient merely wore a simple bandage for a few weeks. I then put the central in place, crowned the lower bicuspid, having previously treated and filled the roots. The last time I saw the patient the adhesion was as good as any one could wish, and there was nothing visible to indicate that he had ever received an injury.

Dr. Pond.—I had a case, a few years ago, which differed from those already mentioned, in that there were no back teeth on either jaw. The six front teeth were in place in the lower jaw, and it fractured on each side just back of the cuspids, the anterior portion of the bone with the teeth being freely movable.

Bandaging proved useless, for, when the front teeth were brought together, the slightest pressure forced the parts out of place; there being nothing to keep the body of the jaw down, it would be lifted upward into the mouth. An impression was ob-

tained by filling the mouth nearly full of soft modelling composition, holding the parts in position with the hands under the jaw, and gently lifting up until the lower front teeth just articulated with the upper ones.

A splint was made of vulcanite, which resembled a partial upper and under plate joined together,—that is, it covered the upper jaw from the cuspids back to the condyles and the corresponding portion of the lower jaw. Sufficient material was cut away to allow for the passage of food. It was placed in the mouth and the parts firmly bandaged, the splint holding the body of the lower jaw in position, and the front teeth performing the same office for the anterior portion.

The parts were held in position perfectly for about a week, when the patient, an ignorant policeman, who was confined to a hospital bed by some severe bruises received in the same row in which his jaw was broken, decided that the jaw was all right, and removed the bandage and splint. The removal was not discovered until the next day, and as the parts were still in position the splint was not replaced. The liquid diet was continued, and when discharged from the hospital, where his other injuries kept him some weeks, his jaw seemed in as good condition as ever.

Editorial.

UNSATISFACTORY LAWS.

IN an editorial in the September number of this journal stress was laid on the necessity of more efficient laws in the various States for the protection of reputable dentistry. In order to add emphasis to our remarks, the ruling in a recent case in New Hampshire was cited. This is the sentence in which the reference occurred:

"In view of the fact that there is some doubt existing in the minds of the profession regarding the constitutionality of laws governing the practice of dentistry and of medicine, and because of the recent decision of the Supreme Court of New Hampshire, declaring unconstitutional the law requiring a license to practise in that State, it behooves the boards of the different States to support one another, and to adopt such uniform action as not to trust the contest of the constitutionality of their laws in the courts, or they may find themselves without any law, which would be a serious retrogression."

A correspondent takes exception to this unadorned statement, on the ground that it is misleading, and he intimates that when writing that article we were probably not aware of all the facts in the case. As the matter is an interesting one and important to every dentist in the country, it may be well briefly to present the case.

Two men, a physician and a dentist, were indicted for practising in a certain county in New Hampshire without a license, contrary to law.

Here are the important sections of the law of that State, relating to the practice of medicine and of dentistry:

"SECT. 3. It shall not be lawful for any person who is not duly authorized to practise medicine or surgery to practise dentistry, unless such person has received a dental degree from some college, university, or medical school authorized to confer the same, or shall have obtained a license from the New Hampshire Dental Society.

"SECT. 4. Said dental society shall, at such time and in such manner as may be prescribed in its charter or by laws, elect a board of censors, consisting

of three members, who shall be elected for such term as may be prescribed by the society, which board shall have authority to examine and license persons to practise dentistry. The licenses shall be recorded by the clerk of said society.

"SECT. 5. No person receiving a license as herein provided shall be authorized to practise until he shall have procured the same to be recorded by the clerk of the court in the county where he resides, if a resident of this State; if not a resident of this State, in the county where he intends to practise. Such licenses shall be recorded in a book provided for that purpose, and which shall bear the title and inscription of the medical and dental register of ——— county, and the fee for recording the same shall be fifty cents.

"SECT. 6. Each person receiving a license upon examination shall pay for the use of the society granting the same the sum of five dollars; upon diploma, one dollar.

"SECT. 7. If any person shall practise medicine, surgery, midwifery, or dentistry without being duly authorized as provided in this chapter, or after his license is revoked, he shall be punished by fine of not more than three hundred dollars for each offence.

"SECT. 8. The provisions of the preceding sections shall not apply to persons who have resided and practised their profession in the town or city of their present residence during all the time since January first, eighteen hundred and seventy-five, nor to physicians residing out of the State, when called into the State for consultation with duly licensed physicians, or to attend upon patients in the regular course of business."

The last clause is the one that gave rise to the trouble. The defendants demurred to the indictment, maintaining that a law was unconstitutional which required some to undergo an examination, to obtain a license, and to pay a fee, simply because they had changed their place of business within an arbitrary fixed period; whereas others of the same or less ability were exempted from these annoyances just because from the accident of circumstances, they had remained in one place from January 1, 1875, until the passage of this law.

The judges decided that the law was unconstitutional in that it unjustly discriminated against certain persons, and they therefore sustained the demurrer.

Our correspondent says that the eighth section was the only one concerned in the decision, and that as a whole their laws on the subject are "generally observed;" but the fact is, that this last clause is the most important of all, for it exempts from the sections preceding all those who have practised in one place since January 1, 1875, and as the judges, by their ruling, have virtually exempted those who do come within the ruling of this important section, we fail to see to whom the law may be applied.

In the course of the judges' opinion the following also occurs:

"The statute also discriminates against citizens of other States. It does not apply to persons residing and practising their profession in the same town or State from January 1, 1875, to January 1, 1879, whence persons who have resided and practised their profession continually since January 1, 1879, in the same town or city in another State are required upon removing to this State to procure a license to practise their profession."

By this it would seem that practitioners from other States cannot be compelled to procure a license in order to follow their profession in the State of New Hampshire, and the laws of this State, therefore, as they are at present, can be but little more effective than a dead letter.

Similar suits with various results have occurred in most of the States that have passed laws of this character, and such has always been the case after movements of this kind.

The necessity for these laws, and stringent laws, is apparent to every intelligent person.

Laws are generally made for the protection of society at large, not for the benefit of individuals; and the result usually is that though the welfare of the community may be advanced, yet certain persons suffer.

Granted, then, that laws protective of reputable dentistry and medicine are necessary, the organized bodies of these two professions should see to it that such laws are actually protective, so firmly made as not to allow of the entering-wedge of a lawyer's quibble.

ABOUT CORRECT.

It seems as if our remarks regarding the inconsiderate treatment of the published statements of Dr. Brown-Séquard and our prediction of a change of front in the near future upon the part of the medical press is being realized, for in an editorial in a recent number of the *American Practitioner and News* we note the following:

"That there is a germ of truth in the apparently absurd claims of Brown-Séquard would seem to be attested by the following item, which is just now going the rounds in the medical press: '*Spermine* is an alkaloid found in the *testicular juice*, in the gray matter of the brain, in eggs, oysters, lampreys, fish ova and milt, also in the products of all atonic mucous membranes. It also appears in the sputa of senile and acute bronchitis, in the expectoration of phthisis, and of emphysema with catarrh, and in the spleen and circulation of anemias and of leucocythæmias. The *hydrochlorate of spermine*, in a dose of one-fortieth of a grain, injected subcutaneously in a dog of thirteen pounds

produced marked mental and physical activity, and powerful and prolonged stimulation of the genital system.'

"We don't know the age of this item, as we have not seen the original article from which it was culled, but take it to be a recent physiologico-chemical investigation proving the competency of testicular juice to supply to the devitalized a vitalizing compound, which, if the alkaloid can be isolated in a pure state, may prove to be a therapeutic agent of real stimulant or constructive force and of easy administration.

"At any rate, it begins to look as if the great Franco-American physiologist was about to turn the laugh on those who have been in too great a hurry to laugh at him."

"Truth crushed to earth will rise again," never fear; a few more such articles as the above from which we have quoted, and those who have made honest investigations with the Brown-Séquard "elixir," will come forward and publish the results of their experimentation in that direction, which have been kept back for fear of being classed with the quacks and charlatans who rushed into print in the secular press. Let us hear from others.

THE TENTH INTERNATIONAL MEDICAL CONGRESS.

IN our Foreign Correspondence department will be found a communication from Dr. Miller, Berlin, regarding the present status of the Dental Section of the coming congress. The section Zahnheilkunde is placed among the medical specialties as No. 14, and precedes Hygiene, No. 15. There are eighteen sections in all. While the dental degree is not recognized in Germany, yet, by mutual consent of the general committee, it will for the time of the congress be recognized and placed on the same footing as the others. Communications in English are to be sent to Dr. Miller, No. 32 Voss Street, Berlin. It is to be hoped that there will be a liberal attendance upon the part of American dentists, and that a number of good papers will be sent in early. Quite a number have already signified their intention of attending the meeting. Let all join, as far as possible, in making our section a grand success.

Foreign Correspondence.

TO THE EDITOR :

Concerning the Dental Section of the Tenth International Medical Congress.—In response to a call of the Organizing Committee (Professors Virchow, Von Bergmann, and Waldeyer), fifty delegates from the various universities and medical societies of Germany met in Heidelberg on the 17th of September, 1888, to take steps in the organization of the congress. At the meeting it was decided that the congress should be held in Berlin, beginning August 4 and closing August 10, 1890.

An organizing committee, consisting of Professors Virchow, Von Bergmann, Leyden, and Waldeyer, was elected, and a general secretary, Dr. Lassar, appointed.

Eighteen sections, including Dental Surgery, were organized, each with a special committee of nine members.

An international medico-scientific exhibition is to be connected with the congress. Statutes and a programme were adopted, which will be given in as far as they particularly concern the Dental Section.

"Art. II. The congress consists of physicians (*approbirten Aerzten*) who have registered their names and obtained their membership-cards. Other savans, who are interested in the work of the congress, may be admitted as extraordinary members."

The delegates did not see fit to change this article so as to include dental surgeons, but decided that the article should be so interpreted as to admit dentists to membership. Since the meeting at Heidelberg the question has been raised whether dentists resident in Germany, but not possessing the German dental approbation (degree), could be admitted to membership. Regarding this point the chairman of the committee on organization decided that only those who possess the recognized degree of that country of which they are citizens may be admitted to membership.

A German citizen holding only an American or Swiss degree is, therefore, not entitled to membership, no more is an American or English citizen not possessing the degree of his own country; on the other hand, foreign citizens practising in Germany are admitted

without the German degree, provided they have the degree of their own country.

Members pay a fee of twenty marks (\$5.00), and receive a copy of the transactions.

Art. III. The object of the congress is exclusively scientific.

Art. X. All lectures and communications in the general sittings, or in those of the sections, must be handed in in writing to the secretary before the close of the sitting. The Editorial Committee decides whether, or in what part, such communications shall be included in the published transactions.

Art. XI. The official languages of all sittings are German, English, and French. Very short remarks may be made in other languages, provided some member is prepared to translate them into one of the official languages.

Art. XII. Sections are, as a rule, to be limited to twenty minutes; discussional remarks to ten minutes.

Art. XIV. Students of medicine and other persons, gentlemen and ladies who are not physicians, but are interested in the proceedings of any particular session, may be invited by the president of that session, or, on application, receive permission to attend as auditors.

There are to be no vice-presidents associated with the congress, but each section is empowered to elect a limited number of honorary presidents and a secretary for each of the official languages.

The committee of the Dental Section, No. 14, is composed as follows: Busch, Berlin, chairman; Calais, Hamburg; Hesse, Leipzig; Fricke, Kiel; Holländer, Halle; Miller, Berlin; Partsch, Breslau; Sauer, Berlin; Weil, Munich.

At a meeting of this committee, held on the 16th of October, 1889, it was decided that the hours from 9 to 12 A.M. should be devoted to practical demonstrations in the rooms of the dental institute, the demonstrations to consist of operations in filling, extraction, and in mechanical dentistry,—in short, operations in all branches of operative and mechanical dentistry.

Demonstrations in extraction and in artificial work are to be under the direction of Professor Busch, those in filling under that of Professor Miller. The theoretical exercises, etc., are to be held from 2 to 5 P.M. They will consist of the usual essays or lectures and the accompanying discussions; besides these, three subjects for general discussion are to be chosen, one to be introduced in the German language (on bromide of ethyl, by Professor Holländer), one in the English, and one in the French languages.

Those desiring to deliver lectures or read essays on particular subjects are requested to send in, along with their announcement, a very short *résumé* of the contents of the same.

Correspondence in German language to be directed to Professor Busch, chairman, No. 40 Dorotheen Street, Berlin; in French language to Dr. Calais, No. 17 Hohenbleichen Street, Hamburg; in English to Professor Miller, No. 32 Voss Street, Berlin.

In America, Drs. Barrett and Taft; in Great Britain, Mr. J. H. Mummery, M.R.C.S., etc., and Mr. W. Bowman Macleod, F.R.S.E., etc., have, on invitation by the committee, expressed their willingness to act in the capacity of honorary presidents.

A fuller report of the steps taken in the organization of the congress, up to the end of October, is given by Professor Busch in the *Verhandlungen der deutschen odontologischen Gesellschaft*, Heft 2.

W. D. MILLER.

Domestic Correspondence.

TO THE EDITOR:

Louisiana State Dental Society.—The Fifth annual meeting of the Louisiana State Dental Society will be held in New Orleans, on February, 19, 20, and 21, 1890. The programme will consist of reports from committees, essays, clinics, and display of dental specialties. Members of the dental profession are invited.

J. G. McCULLOCH,
Recording Secretary.

NEW ORLEANS, January 2, 1890.

TO THE EDITOR:

The Seventh Annual Convention of the Maryland State Dental Association finished its work and adjourned yesterday evening (December 7), after a lantern exhibit and lecture on "Life from a Biological Point of View," by Dr. W. Xavier Sudduth, of Philadelphia. The business sessions in the morning and afternoon were devoted chiefly to the giving of clinics, the reading of papers, and the election of officers, a great deal of time being devoted to the discussion of Dr. Cyrus M. Gingrich's paper on "Operative Dentistry." In Dr. B. Holly Smith's paper, on "Dental Literature," he congratulated the society on the high order of merit which the dental journals have attained. The following officers were elected and installed: Dr. A. B. Scott, president; Dr. A. B. King and Dr. John C. Uhler, vice-presidents; Dr. W. W. Dunbracco and Dr. J. J. Williams, secretaries, Dr. T. H. Davy, treasurer, and Dr. Cyrus M. Gingrich, Dr. A. Price and Dr. A. P. Gore, executive committee. Dr. W. B. Winder, of the Baltimore Dental College, made a short speech, urging members of the association to join the National Dental Protective Association. Dr. A. P. Gore, Dr. A. J. Volk, and Dr. F. F. Drew were appointed to take notice of any violation of the code of ethics and report to the chairman in sealed envelopes. A committee, consisting of Dr. Winder, Dr. Wm. A. Mills, and Dr. Bernard Meyer, was appointed to look into the affairs of the defunct Odontological Society and transfer any funds belonging to it to the Maryland Association. Clinics were given by Dr. S. H. Guilford, of Philadelphia, on "Method of Staining and Coloring of Artificial Teeth;" by Dr. Wm. H. Gingrich, of Norfolk, on "The Treatment of Approximal Surface of Molars and Inserting Compound Contour Gold Fillings;" and by Dr. David Genese, of Baltimore, on "The Attachment of Pivotal Crowns of a New Form."

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Current News.

WE are informed that a *Dental Anatomy* by a well known member of the profession is now in process of preparation which, when completed, will furnish a much-needed text-book upon that subject, and, coming from the source it does, will be a standard work.

MASSACHUSETTS STATE DENTAL SOCIETY.—The following officers were elected in the Massachusetts State Dental Society at its twenty-fifth annual meeting, held in Boston, December 12 and 13, 1889. President, Robert R. Andrews, D.D.S., Cambridge, Mass.; First Vice-President, Geo. F. Eames, M.D., D.D.S., Boston; Second Vice-President, J. W. Ball, D.D.S.; Secretary, Edgar O. Kinsman, D.D.S., Cambridge, Mass.; Treasurer, Edward Page, M.D., D.M.D., Charlestown, Mass.; Librarian, Jos. King Knight, D.D.S., Boston.

Executive Committee.—Drs. D. M. Clapp, Boston; G. A. Gerry, Lowell; E. W. Branigan, Boston; W. E. Boardman, Boston; H. S. Draper, Boston.

THE Fiftieth Commencement of the Baltimore College of Dental Surgery will be held on Thursday, March 20, 1890. All graduates and friends of the College are invited to be present.

THE new Dental Crown of Dr. W. H. Gates, which is just now attracting marked attention, will appear as the culmination of the subject of "Crown Mounting" in the forthcoming new edition of Garretson's Oral Surgery.

DR. ATKINSON says the expression of *physical pain* has no meaning. We know pain only by the uncomfortable movement of what we call consciousness, and so, of all that we know, it is simply a mode of consciousness. If the word *physical* could be wiped out, it would do away with much of our misapprehension.

DR. A. H. THOMPSON says that his cure for sensitive dentine is a temporary stopping of oxyphosphate for a week or two. He has found it reliable and satisfactory for all cavities in sensitive dentine.

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No. 3.

Original Communications.¹

THE RELATIONS OF DENTISTRY TO MEDICINE, AND ASEPTIC DENTISTRY.²

BY J. S. WIGHT, M.D.,

Professor of Operative and Clinical Surgery at the Long Island College Hospital.

As a matter of fact and by common consent medicine is a generic term. It covers the entire field in which we work to prevent and cure disease. And it must, in this sense, include the department of surgery as well. And in whatever way we deal with surgery, we consider matters that relate to the question of medicine,—either preventive or curative. Now, it so happens that all of the specialty which we call dentistry occupies, for the most part, the field of surgery; it is a special kind of handwork. But this fact does not exclude another fact. In dentistry there are many questions that relate to medicine as distinguished from surgery. Then, we have this conclusion: Dentistry is both medical and surgical.

Let me say that dentistry is a special practice. It appears to have started in a small way,—as the art of pulling teeth. It has risen step by step, without the suggestion, the aid, and the support

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in this country.

² Read before the Brooklyn Dental Society, January 27, 1890.

directly of medicine, until it has been built up into a system of practice, which everywhere confers benefits and improves health. Other specialties have set out from medicine, and have erected themselves into a somewhat independent existence. And the more they keep out of sight the great principles of medicine, the less their beneficent progress. We may admit at once that special medicine relates to special organs; and then we may say that special organs are related to the general organism. Let the general organism suffer, and special organs suffer also. And this means that the specialist who has not general knowledge, and who has special knowledge, from the very nature of the case, has incomplete, imperfect, and insufficient knowledge. That is to say, no man can be a complete specialist who has not acquired a general knowledge of medicine. And I am now going to admit that the dentist comes very near an exception to this rule: a good dentist may exist without a knowledge of general medicine. And yet, permit me to add that, if he had a knowledge of practical medicine, he could accomplish, in the main, better results. Not that I would have dentists become general practitioners,—that is not what I mean. It is this: I would have general medicine throw such light as it could upon the entire field of dentistry. And so I would encourage the dentist to move his camp somewhat over into the field of general medicine.

How shall this relation be arranged? I am of the opinion that the dentist might derive much advantage from the attendance on one course of medical lectures; two courses of lectures would be better still. And if he cannot attend regularly, he would derive much benefit from lectures on anatomy, physiology, general medicine, and the principles of surgery. Ought the dentist to be a doctor? This is not my point. Under no conditions should he practise medicine and surgery,—even though he have a medical degree. My point is this: the dentist could practise the special surgery and the special medicine relating to the teeth and mouth, contained under the head of dentistry, if his special knowledge is supplemented by a reasonable degree of general medical knowledge.

Let us approach this subject from another stand-point. Suppose a man who never studied medicine comes forward and sets himself up as a specialist in diseases of the skin, or the eye, or the ear, or of the uterus, what would be said in regard to the matter? He may be exceptionally clever, in some respects, in what he professes and undertakes; his practice may be followed by a good degree of success; and he may be well educated in many directions. Having

not the least intention of throwing any imputation or the least reflection on dentistry, I may say that, by common consent, the dentist does most admirable work from just this stand-point. In fact, he is an eminent specialist, without the general knowledge that should underlie the practice of every specialty.

And then, there is another relation which dentistry bears to medicine. Does my patient have diseased teeth, I cannot well cure him until his teeth are attended to. Well, if I doctor them, I am not sure that everything is all right; he may improve or he may not; but if I send him to the dentist, who knows how to doctor his teeth, then everything goes well; my patient improves, not altogether on account of the doctor for the teeth, but because what I can do for him is not now undone by the irritation of diseased teeth. You will see that I admit the incomplete knowledge of the general practitioner in the field of your specialty; and that you can co-operate with him not only in curative, but also in preventive medicine. It is not necessary for the doctor to know all about dentistry,—and yet he ought to have some general idea about the subject: then he will be a more competent practitioner. Nor is it necessary for the dentist to know all about medicine, but he would be able to do better work if he had a good general knowledge of its principles. Our meaning is not that the dentist should practise medicine, nor that the doctor should practise dentistry,—still there may be an exception to this rule. In some of the rural districts, it might be important for the doctor to know something about dentistry. He may know how to extract teeth in a scientific way; he may know how to keep teeth clean; and he may have some idea as to the necessity of saving and filling teeth: then he can advise his patients to go to a dentist, who may be found not many miles away. In fact, this point has been considered by some of the medical colleges; and so there is a tendency towards the establishment of a dental specialty in the curriculum of medical teaching,—much the same as we have other specialties.

In the next place, a subject which has a great interest for me—and I doubt not for others—comes to my mind for consideration,—that is, the subject of *aseptic dentistry*. It is true that dentistry is more in the line of surgery than of medicine; and if we approach it from this side, we shall obtain clearer ideas about it. And then let us set out with facts that will illustrate our subject. When I speak of infection, I mean the same thing as blood-poisoning. And it is about certain facts relating to infection that I am going to speak. A very high death-rate occurred at one time in the College

Hospital from septic fever among the surgical patients. On the supposition that the infection was local, the beds and the wards were cleaned in the following way: They were steamed for twenty-four hours with the vapor of carbolic acid and vinegar; the walls were washed with a carbolic acid solution; the clothing was immersed in boiling water; and then the wards were thoroughly ventilated. The patients were put into the disinfected ward, and sepsis went on much the same as before. Evidently the difficulty had not been reached, nor had the fatal influence been removed. Had anything been overlooked in the work of disinfection,—that is, on the ground that there is such a thing as infection? I found that my own hands had not been duly considered, nor those of my assistants. And then I asked myself if I had used the best disinfectant? My answer to this question was that I had not. Now, let me tell you what I did. Understand that I was impressed with the importance of keeping my patients from dying. They were surgical cases. Then I selected chlorine, as it is found in chlorinated soda. After washing off the ordinary dirt, I applied chlorinated soda to my hands, sometimes full strength and sometimes diluted. You know the surgeon operates with his hands, and they come in contact with the fresh surfaces; my hands were thus made surgically clean, so they could not infect the wounds I made with my knife. And what was the result of this change in practice? As time went on, more and more infection and sepsis diminished, while at the outset a very marked change took place for the better. There were more speedy recoveries, and fewer deaths occurred. And what was the meaning of this? Simply we had demonstrated that the surgeon, in trying to save life, had carried the causes of death on the very hands he put forth to rescue and save. Here were strange secrets that had defied investigation for centuries. A new line of practice had been instituted in the field of preventive medicine,—for such it was,—even though explored by the surgeon. And so what we mean by surgical cleanliness is to disinfect all things that come in contact with our wounds, to prevent them from becoming infected, to permit them to heal in the normal way; that is, to keep the wounds we make aseptic; in other words, to practise antiseptic surgery. So much for our illustration.

Should dentists have clean hands? Should they have clean instruments? When one thinks about it at all, there can be only one way to answer these questions; indeed, they are of primary importance. You will permit me to analyze the practical relations. In the first place, there are two kinds of cleanliness: one ordi-

nary,—that is, the hands are washed clean, so that the eye cannot detect any dirt on them. This condition does not include that of surgical cleanliness, in which the hands have been completely disinfected, when they are harmless, not having any infecting material on them. That is, as we have already said, surgical cleanliness consists in having all infection removed from the hands, in so far as they are concerned. As surgery is handwork, it is very true that dentistry is pre-eminently such kind of work, for it is done with the hand. And the hand should not only be trained, but it should be clean,—I mean the hand of the dentist. And if this is true of the dentist's hand, it is also true of his instruments,—that is, they should be clean; they should not have any infecting material on them. Each instrument should be above suspicion. There should be a reasonable warranty that it is really surgically clean. This is of much more importance than its general appearance. Infecting material is not seen by the eye, but it is none the less potential in all manner of surgical mischief. It shows itself by its works, and its works are for the most part bad.

We will suppose that the hands and instruments of the dentist are aseptic, for that is what surgical cleanliness really means. He begins his professional work for the day, then, when he has made his hands and instruments aseptic. Well, he extracts a tooth; he cleans a tooth; or he fills a tooth. This is all right for the first patient. It may be a patient who would be greatly offended if it were said that his or her mouth is not surgically clean. And yet, in the light of my argument, who would want this dentist to put his instruments into his mouth—not to mention his fingers—just as they come from this first patient's mouth? Is there a dentist here to-night who would like to have such an instrument used in his mouth, or who would use it for one of his patients, before it had been made aseptic again?

Does the dentist know the fearful responsibility he incurs in regard to this question? Let me illustrate. He extracts a tooth from a mouth in which there are specific ulcers; the jaw of the instrument becomes covered with infecting pus; he wipes it off, or he thinks he does; the instrument is ready, like the lancet, for vaccination; an innocent lady takes a seat in his dental chair, and he extracts one of her teeth with this same instrument. It is not my object to-night to trace and picture the long series of unfortunate consequences that may follow. Only let me say, in the name of science, humanity, and charity, that these consequences are entirely avoidable. If this is so, may we suggest where the responsibility

rests? Whose fault is it? Any one can answer this question. But the dentist replies, Am I to clean my forceps one hundred times to meet this one possible emergency? Undoubtedly. Which is better, to wash and clean your forceps so many times, or to incur the responsibility of causing so much suffering to an innocent patient who has confidence in your care and skill? Which will give you more trouble, to take a little time to apply the principles of aseptic dentistry, or to meet the legal consequences of ordinary care and skill in your work? For that is indeed what it amounts to in the light of modern science and recent practice.

Let me further illustrate. Science has shown us that consumption—that is tuberculosis—is an infectious disease; that it can be implanted in a perfectly healthy individual; that it can be conveyed from one person to another, and that it is caused by a micro-organism, which is present in the system of those who have it. This disease attacks the lungs frequently. Expectoration follows. The bacilli are in the sputa. And they may lodge in decayed teeth, on the gums, and in other parts of the mouth. Has it occurred to any one present that these micro-organisms can be conveyed from the mouth of a consumptive to the mouth of a healthy person, and cause infection and all the consequences that result from this dread disease? Is any one sure that he has never conveyed the virus of tuberculosis from one person to another by means of instruments that were unclean? We may allow that, hitherto, this effect, which we can hardly doubt, has only been from excusable ignorance; yet, in the future, who can doubt that its repetition must be set down to the account of criminal negligence. And so, what man among you, now knowing what might occur, would hesitate to take thought of this matter, and make his instruments aseptic, as well as his hands, after he has served one patient, and before he comes to serve another?

And may I suggest, from analogy, the possibility of Rigg's disease belonging to the same general subject of infection? The insidious and progressive nature of this disease, extending from point to point, indicates phases of resemblance to other infectious diseases. One cannot explain this disease quite so well on any other theory; and yet this does not prove that Rigg's disease is infectious,—the theory of infection gives us the most reasonable explanation. Suppose this view to be the true one; then, what we have said in regard to syphilis and tuberculosis will indeed be true in regard to Rigg's disease. More than once have I asked myself, Can it be possible that this fearful scourge of the human teeth is

infectious? and can it be communicated from one person to another? This question will have to be asked; it will have to be the incentive to investigation; and the answer will be of moment whatever it may be. If the disease is infectious, all may find out a cure; if it is the result of senile changes, we may only be able to palliate it. At all events, there is no reasonable doubt as to the need of having clean instruments,—in other words, it will be good practice to act as if this view were true.

The extent of the field beyond these illustrations is at present unknown,—that is, we do not now know how many pathogenic micro-organisms may be likely to affect the mouth, in one way or another, by means of dental instruments. Let it suffice that we have directed the attention to this important subject; a subject in which lies immense possibilities of harm and peril; a subject which belongs to the field of preventive medicine, in which we find the greatest advancements and the noblest benefactions.

I will try to tell you how to keep your hands and instruments clean; by this, I mean surgically clean,—that is, aseptic. In the first place, the hands should be scrubbed with soap and water, using a large nail-brush. At the same time the nails must be kept thoroughly clean. Then they should be washed with a solution (1 to 5000) of mercuric chloride. Subsequently let them be washed in alcohol from time to time. Or, make a solution as follows: First, mix glycerin and carbolic acid, equal parts; and then make a one-per-cent. solution of this mixture in water, and have it ready for bathing the hands, when required. Other methods need not now be described, since these are sufficient. In the second place, it would be very easy for the dentist to have a small vessel containing water over a gas-jet, burning so as to keep the water at a boiling temperature; in this boiling water the instruments can be immersed after being used in the mouth of one patient, and before being used in the mouth of another. This would insure the destruction of pathogenic micro-organisms, and prevent infection. A plan so simple, and so easy of execution, can be adopted by any operator. One now submits to the true teaching of science; one puts to the best use the principles of asepsis for the benefit of those who suffer; one may not neglect to apply new facts, and so permit harm to come to others who depend on him for aid, and pay him liberally for his assistance. In fine, the law of asepsis rules every part of the great territory of anti-septic work, and in no department more than in dentistry.

RAPID METHOD OF INSERTING AND FINISHING CONTOUR FILLINGS WITHOUT THE AID OF A MATRIX.¹**BY J. E. WAITT, D.M.D.**

FOR years, science and skill have been coming to that place where each and every department of life is being forced to that point where its work may be accomplished with the greatest ease and in the shortest time. The department which we represent has been among the foremost in devising ways and means for the accomplishment of our daily work with the least inconvenience both to ourselves and our patients. It shall be the aim of this paper to present you, in a few words, a few (possibly new) ideas, and thereby assist you in the labors of the day, and the rapid and satisfactory completion of those large or difficult contour fillings with which we have to deal.

By the use of Dr. Jack's and other matrices very many of the difficult operations in contour filling have become, under the skilful hand, very simple operations; and operations once requiring hours for their completion are now accomplished in minutes.

The impossibility of having the walls of a cavity in full view, and the inconvenience of easily adjusting a matrix, led me to discard all forms of matrices, and look about for a method of quickly reaching the same or a better result. After some years of experimenting with methods, foils, and preparation of cavities, I am pleased to present you a method which you will find to answer the requirements of the case, thereby making operations, formerly long and difficult, so short that they become a pleasure both to the patient and the operator.

First, space by a separator or tape, to the width of a No. 3 or 4 separating file. Apply the dam in the usual or the following manner: In the case of a right superior second bicuspid, lay the dam over the face, and apply it to the mouth in the position it is to occupy, then with a pencil mark the centre of each tooth from the right superior lateral to and over the first molar. Punch out a hole for each tooth, and then apply the dam, beginning at the

¹ Read before the American Academy of Dental Science, December 4, 1889.

lateral and working backwards. Over the molar slip a clamp, or, if close to the second molar, pass a ligature up between, and leave it. Then, with a thin and flat burnisher, turn the dam up on itself around each tooth, and dry with cotton.

The dam applied in this manner obviates the tying of a ligature about each tooth, which is a nerve-trying experience. This method allows greater freedom for working, because the dam is out of the way, and also affords better light. It will be found to answer the purpose for large cervical cavities when properly applied.

Next, prepare the cavity as usual, except do not cut any retaining points, but in their place cut a fine groove across the cervical wall and down the buccal and palatal or lingual walls with a fine burr, and make the opening on the crown surface when possible, slightly dovetailing towards the body of the tooth; then, with a sand-paper disk, smooth the mesial or distal surface, as the case may be.

The gold to be used becomes the next feature, and must be a soft gold, easily moulded under a burnisher. I use the new gold of the Boston Dental Manufacturing Company, ropes No. $\frac{1}{2}$. These may be flattened and made into cylinders with great convenience.

In using soft foil, take No. 4 soft, cut in one-half sheets, and roll to about the size of three-sixteenths of an inch diameter, and flatten. Each cylinder to be of a length slightly exceeding the depth of the cavity from front to back, and its size in the square to depend upon the width of the cavity and the method of condensation.

I prefer the No. $\frac{1}{2}$ ropes to any other, for the ease with which cylinders may be made from it. For the intermediate layers, of which I will explain later, the Boston Dental Manufacturing Company's No. 4 foil is the form used.

In preparing the cylinders, take a strip full length of soft gold, grasp it with a pair of pliers, and fold over and over until the size wanted is rolled; then condense easily endways, then sideways, and repeat until it is of the desired square.

Never cut a strip in two lengthways to get a short cylinder, but rather fold it upon itself lengthwise, and proceed to roll as in the usual manner. With many of these cylinders of various sizes rolled during leisure-hours, or by an assistant, considerable time may be saved at the moment of greatest strain to yourself and patient.

Now place a floor of these squared cylinders across the bottom of the cavity, allowing the ends to extend slightly over the edge,

and with a large round or foot-shaped plugger partially condense this layer; then, with a couple of pieces of No. 4 foil made cohesive and *single thickness*, placed over the partially condensed surface, the whole is thoroughly condensed with a smaller, round plugger, care being taken not to allow the plugger to enter the gold extending over the edge.

When thoroughly condensed, pass a thin, flat burnisher up by the ends, and, with a slight pressure, force them over the edges of the cavity in each direction, making the burnishing carry the gold over the edges, thereby locking it and preventing tearing it out. Increase the pressure upon the burnisher until the ends are well condensed, and shaped to the desired contour.

When this point is reached, place a couple of thin layers of cohesive gold over the whole, and condense well. This is done for the purpose of locking each layer and giving edge-strength to the contour. Burnish this edge well, and then proceed with your second layer of soft cylinders, as you have done with your first, with the exception that the middle cylinders are to be slightly longer than the side ones, to allow for the swell of the contour. Burnish, and proceed as before.

The crown surface can be finished by building up to the desired shape with cohesive gold, which can always be made to unite with the soft gold, if the first union is made with pieces of a single thickness, well united by mechanical force, and condensed with the soft gold.

Contour fillings, built in this manner, do not need any finishing with a file or sand-paper, as the whole surface is left finished at each stage, and any amount of overlapping gold is burnished off, leaving a clean, smooth edge, and highly polished.

By this method the entire wall edge is constantly in view, and one point is not left for another until the former has been completely *filled* and finished, which alone is enough to commend this method to our careful consideration.

ORAL SURGERY CLINIC.¹

SERVICE OF PROFESSOR JOHN S. MARSHALL, M.D.

THE patient before you, gentlemen, is a railroad engineer, thirty years of age, who has recently been in a collision, and came out rather badly battered up. He is suffering from a broken wrist, contusions and lacerations about the head and face, and a compound comminuted fracture of the lower jaw. The accident occurred about two weeks ago. The broken wrist, contusions and lacerations about the head and face have been cared for; he is now referred to us for treatment of the fractured lower jaw. The broken bone has been treated since the injury by the ordinary occipito-mental bandage and wiring the teeth, but these fail to hold the ends of the fractured bone in apposition.

Let us now proceed to a critical examination of the mouth and the fractured jaw. First, we notice the crowns of the superior, central, and lateral incisors are fractured obliquely outward and upward, the centrals losing about one-half and the laterals about one-third of their crowns. This indicates a blow upon the lower jaw, near the chin, the direction of the force being upward. The lower jaw is fractured through the alveolus of the right lateral incisor (this tooth is missing, having been knocked out in the accident), and then extends obliquely backward and downward through the body of the bone. The six teeth to the left of this,—viz., three incisors, the cuspid, and the first and second bicuspid, together with their alveolar process, are broken loose from the body of the bone, so that they are freely movable in all directions.

The gum is intact along the line of this horizontal fracture upon the labial surface, but upon the lingual surface it is considerably lacerated, and the bone is here, and at the ends of the fracture, exposed to the secretions of the mouth. Suppuration has taken place, as generally happens in compound fractures opening into the mouth, owing to the fact of the great difficulty in maintaining an aseptic condition of the parts.

Until the introduction of the antiseptic method of treating wounds, compound fractures, in any location of the body, were

¹ Delivered before the students of the Medical and Dental Departments of the Northwestern University, at St. Luke's Free Hospital, Chicago, Ill.

generally followed by suppuration. Vigorous efforts should be made, however, to combat these conditions by the free use of antiseptic mouth-washes, and if this treatment is faithfully carried out, in many cases it will prove successful. The mouths of the most cleanly persons are the habitat of great numbers and various forms of micro-organisms, while the food and the fluids of the mouth, loaded with these organisms, cannot be prevented from entering the wounds; consequently, fermentative processes are set up, and pathogenic bacteria readily find access to the tissues.

This fracture is a somewhat peculiar one, and may result in loss, from necrosis, of that portion of the alveolar process, and the teeth contained in it, which are broken loose from the body of the jaw. Injuries to the bones of the face, however, are less likely to result in necrosis than like injuries in other portions of the body, which is due to the greater vascularity of the tissues of the face. You will notice that the teeth occlude only upon the right side, posterior to the line of fracture, through the body of the bone, the space between the upper and lower teeth of the left side is fully three-eighths of an inch, while the movable fragment is carried inward and to the right fully one-half of an inch.

In order to treat this case successfully, it will be necessary to construct an interdental splint, with metal arms passing out at the corners of the mouth, and turned backward on a line with the lower jaw, and outside the cheeks. This form of splint is known as the Kingsley.

After plaster casts have been made from impressions taken, we saw through the lower one upon a line with the fractures, and adjust the fragments of the cast to their normal position by the aid of the cast of the upper jaw. If the occlusion of the teeth of the casts is made properly, and the fragments of the cast of the lower jaw united with plaster of Paris, in their new position it will represent the shape and position of the jaw before the fractures occurred; and a splint constructed to fit this will bring the fragments of bone into their normal position. It is made secure by placing a compress under the chin at the most depressed portion of the jaw, and passing a bandage back and forth over the arms of the splint and under the chin.

[The splint was constructed of hard rubber with soft steel arms, and inserted two days later. At the end of two months, union of the bone had taken place in each of the fractures and the occlusion was perfect.]

Reports of Society Meetings.

AMERICAN ACADEMY OF DENTAL SCIENCE.

(Continued from February number.)

President Seabury.—The next matter in order is a paper entitled "Rapid Method of Inserting and Finishing Contour Fillings without the Aid of a Matrix," by Dr. Joseph E. Waitt, Boston.

Dr. Waitt.—Gentlemen of the American Academy of Dental Science, the method that I present to you is not new, neither is it entirely my own; it is a chip from here and a chip from there, and putting them all together, I reached the result of which I will show you a specimen, and tell you how I accomplished it. (For paper, see page 136.)

Dr. Andrews.—The subject is so interesting that I wish we had a black-board here, so that Dr. Waitt might demonstrate his method more clearly; and I move you, sir, that we have one hereafter for the use of the members.

Dr. Ames.—I should like to ask Dr. Waitt how long it would take to fill a cavity of the size shown in specimen No. 2. Could you do it in half an hour?

Dr. Waitt.—You could finish the filling in about half an hour. The filling, as far as you see it there, or with one more layer, can be done in about ten or twelve minutes. It will take as long to build that top as it does the three-quarters or seven-eighths of the filling up to that point.

In making these squared pellets, or squared cylinders, I take these ropes, if I want to make a very long cylinder, No. $\frac{1}{2}$, and fold this rope on itself lengthwise, then over and over. If I want to make a large cylinder, I start with full width of rope and fold it on itself and roll it somewhat larger than the cylinder is to be when squared.

Dr. Barker.—So far as I was able to comprehend the doctor, the method he describes is not dissimilar to the one I have been using

for several years, and doubtless many others employ it. In regard to the preparation of the cavity, he made a remark that attracted my attention. It was this: "There are no retaining pits used." I apprehend that by far the larger portion of good operators have practically abandoned retaining pits.

The preparation of the doctor's cavity is almost identical with the method that is described in nearly all the standard works on operative dentistry. Without the use of a diagram, or a black-board, I confess my inability to grasp the minutiae of the locking and interlocking he describes.

The method consists simply, as I understand it, in laying a mat, a flattened cylinder, or a block of unannealed foil on the floor of the cavity and condensing it. The floor may be thus formed of one block, if it be sufficiently large; place now a flattened cylinder at each border, condensing them laterally against the walls; lay on the bottom one large or three smaller blocks, which, when condensed, expand laterally, thus fastening the side-pieces in position; more blocks may be introduced at the bottom and be treated in the same way. When the cavity is two-thirds or more full, begin to work on cohesive foil. It will readily cohere by the joint effects of molecular and mechanical cohesion, if good serrations are employed; complete the filling with cohesive foil. The bur-nisher should be employed on the proximal aspect of the unannealed foil during the various steps of the operation.

Dr. E. G. Tucker.—Mr. President and Fellows, I have never used gold foil in any other form but pellets of different sizes, the small, delicate ones in front teeth, large ones in large cavities (grinding surfaces), where great *packing* pressure could be given. By carrying out the filling to the edges with these small pellets and *sharp-pointed* pluggers, you can get as perfect a filling—polished and durable—with No. 4 soft gold and hand pressure as can be made with automatic mallet and hard gold. I have tested this mode of filling fifty-four years, and have used no other to the present day. I will show the Academy four front teeth that I filled for a young man in Harvard College, which were used thirty-six years after being filled, and then were extracted on account of general disease of the sockets of all his teeth, from the effects of which they became loosened. As you will see, the fillings are still in excellent condition and preserved those teeth during that long period.

Dr. Williams.—In regard to mats, or pellets, as they used to be called in Dr. Tucker's early days, this method reminds me of the way his brother and he used to make fillings that made such a repu-

tation for American dentists. I think it was similar to the manner, described by Dr. Waitt.

Dr. Briggs.—I do not perfectly understand Dr. Waitt's paper. I wish I could have it explained, as Dr. Andrews suggests, with a black-board. I think he has given us something new, whereas I am quite sure that Dr. Barker has given us something old. His is the ordinary soft filling; but I think that Dr. Waitt's method may have something more in the finishing, perhaps, than any mere question of using soft or cohesive gold. I do not know, perhaps some of the members understand it better than I do, but it seems to me that the other methods spoken of are very old, and I hope that Dr. Waitt will endeavor to explain his process more fully by the use of a diagram.

Dr. Andrews.—I want to say a few words criticising the shape of the cavity formed by Dr. Waitt. We understand that the shape of the cavity is exaggerated, but you will find the cervical wall to be the weakest part of the whole cavity. We know that if we cut across the tubuli, at the cervical wall, there is dead tissue there, and I should think that the filling could be quite as well made if the floor of the cavity was cut square across or made to slant outward rather than inward.

Dr. Waitt.—I said in the first place that it was an exaggerated case. I expect that each one will use his own judgment. The filling can be practically put in as well on a flat floor as it can on a floor that has a groove cut across it, but where the tissue is comparatively hard, a slight groove can be made. I use the finest inverted cone that the S. S. White Company makes. The filling is a soft gold filling, with the exception that a layer of cohesive gold is placed between the layers of soft foil. The contour is made entirely by burnishing. The pellets are put into the cavity with the ends standing out, somewhat longer than the cavity is deep. It is the length of these out-standing ends that makes the contour. Then again, where each layer is locked, that makes it a little stronger, and you have a hard edge to burnish on to.

Dr. H. A. Baker.—I thought that when Dr. Andrews began to speak he was going to bring up just what I had in my mind, only my exceptions are at the other end of the cavity. What I wish to call attention to is the way in which the essayist forms his grooves. It seems to me that if he brings his grooves clear up through the enamel of the crown, he leaves a sharp corner which necessarily must be very weak, and in my patients' mouths that corner would break off just as sure as the world. To avoid this, I

should bring the groove up under the enamel and not cut through it, and leave the corner on a bevel, and protect it by a covering of gold, which would resist the occlusion. Another point in regard to his cylinders: You make a cylinder of rope, and one gets into an elliptical shape, and you cannot avoid it; the result is, your cylinder is thicker in the middle than it is at the ends. Now, in the place of ropes, I would take non-cohesive pellets and flatten them out, lay the flat sides one upon another until you get the desired thickness; then, bending the ends towards each other, the result is, one gets a cylinder in the cavity like so many leaves in a book, one upon another, with one end against the wall of the cavity, the other against the matrix; and thus you have an even thickness throughout. This should fill the cavity about one-third full, then forming an anchorage above this, and finishing out with cohesive gold, protecting your corners as I described before, and you will have a filling which will stand the test of severe usage.

Dr. Briggs.—As I understand it, it is not so much the shape of the cavity as it is the filling. It may be, it is boring the others, but I wish that Dr. Waitt would give us a *résumé* of his process of putting in the filling.

Dr. Waitt.—Perhaps you are getting too much, gentlemen. I told you in the first place that it was not entirely my own, but a chip from here and a chip from there, and putting these together I got this out of it, and this I can do. Now, the preparation of the cavity or the making of the cylinder is immaterial. I do know that I can take a patient in my chair and fill a cavity in one-quarter of the time that I can do it with cohesive gold, or any other method that I have ever seen. It is my way, and yet it is not my way entirely, because it is a combination of the parts of several other methods.

In the first place, if we look at the end of the cavity from front to back, we see here these squares laid side by side. First, place these squares across the bottom and only partially condense them with a large plugger. Cohesive gold is then placed over this in shreds, as it were, of the thickness of one single sheet at a time, and with a plugger, the serrations of which are sharper than for ordinary condensing, make a thorough mechanical union with the soft gold. I put on perhaps three or four thicknesses of this single foil and carry them right straight down, as hard as I can condense it by hand pressure. Now, I do not condense beyond what is to be the contour of the tooth, for by so doing you are likely to push the plugger through that portion. After the first layer is put in, locked,

and condensed, I take a burnisher and carry it up and about the extending ends and form the contour, and burnish away the small amount of overlapping gold. That layer is then practically finished. I claim that after that layer has been put in, you could leave it for weeks, and then take out the filling, and the bottom of your cavity will be perfectly dry.

Dr. Clapp.—I would like to ask Dr. Waitt if he uses a mallet at all?

Dr. Waitt.—When I get clear up to the surface, which would become the grinding edge, I then use a mallet. I have seen soft gold fillings put in by hand-pressure where the patient has ground and articulated on the filling, and it was not broken. I cannot do it. I would be very happy to learn how to condense soft gold by hand-pressure to stand such a strain.

Dr. Andrews.—May I ask Dr. Waitt the object of the cohesive gold?

Dr. Waitt.—The cohesive gold, as you see it in this layer, extends clear out to what would be the edge of the contour of the tooth. It acts as a face or a resistance to burnish against.

Subject passed.

President Seabury.—Dr. F. G. Eddy will present a new mouth-piece for saliva-ejectors.

Dr. Eddy.—There is a mistake in the announcement on the card that I was to present a *new* mouth-piece. I do not know how it happened. There is nothing new in regard to this mouth-piece. It is simply the old mouth-piece with lengthened shank, and with a stop-cock put a little lower down, so as to be under the control of the patient.

As I was leaving the office to-day, Dr. G. W. Porter, a surgeon of Providence, handed me this box, part of the contents of a dermoid tumor, removed a few days before, and within that, among some hair and some fatty substances, he found these teeth, and also these pieces of bone. Out of sixty ovarian tumors he has found but twelve dermoid cysts. This is the only one in which he has found any teeth. With them he also found the left half of a lower maxillary bone.

Dr. Andrews.—The little stop-cock in Dr. Eddy's ejector is certainly an improvement, but I had hoped that we were going to get something that would not suck in the soft tissues.

President Seabury.—I have an old ejector, the holes of which are on top.

Dr. Briggs.—I like this ejector very much. I would like to ask Dr. Eddy if, in using it in ordinary operations, *débris* would be likely to get into the cracks and stop them up very easily?

Dr. Eddy.—I think not. I use it daily.

Dr. Waitt.—I think the best mouth-piece I ever saw was one shaped something similar to this, but the end of the tube came down nearly to the bottom of a little cylinder made of perforated metal and surrounding it. The saliva can come up in it three-fourths of its length, then pass down and go into the tube. I have used one of them five years, and I never had any trouble with it. I would like to ask Dr. Eddy, Will these fine slits let thick, stringy saliva pass through them?

Dr. Eddy.—Yes, sir.

Dr. Williams.—I have an impression that this plan of Dr. Eddy's, of having slits instead of holes, will be an improvement. There is a chance for a slit to clear itself, while a hole blocks up. There is an objection to the weight of this ejector. I have a short one, not more than five inches at the most. I put in the lightest rubber tubing that I can find that will not collapse by suction, so as to avoid any sense of weight in the mouth. I find the patients feel relieved, and consider it somewhat of a luxury.

Dr. Andrews.—One of the advantages of this saliva-ejector is that the patient can hold it in the mouth; but what I wanted to suggest was that the mouth-piece might be difficult to cleanse. Any one of you who has tried to clean a saliva-ejector must have been surprised at the amount of filth that can get into an instrument of this kind.

Dr. Codman.—I have noticed among practitioners a growing tendency to make dental operations complicated. I think that has been so very largely in the use of the saliva-pump. I think, in a great many cases, it is entirely unnecessary, and should be dispensed with. The drawing out of a person's system of a pint to a quart of saliva must certainly be very exhausting, and this is done in many cases where the saliva-pump is not needed at all. I don't think I have used one in six months, for I find by a proper adjustment of the rubber dam with ligatures my patients get along much easier than they would by the use of the saliva-pump.

Dr. Meriam.—I should like to present, Mr. President, as chairman of the Executive Committee of the Massachusetts Dental Society, a cordial invitation to the Academy to our next meeting, to be held on Thursday next. In addition to our usual programme we shall have a small exhibit, not as extensive as last summer. The

annual address will be delivered by Rev. Alexander McKenzie, D.D., secretary of the Board of Overseers of Harvard University. The address will be given at 4.30 o'clock in the afternoon, and we hope there will be a large attendance. It will be given in the large hall of the Young Men's Christian Association. We have sent an invitation to the faculty and students of the Harvard Dental School, and also to the faculty and students of the Boston Dental College, and we trust that the attendance will be large, to do justice to our orator.

Dr. Fillebrown.—Mr. President, I move the invitation be accepted and placed on file by this society.

Dr. Waitt exhibited a nitrous oxide light for photo-microscopic purposes with the following description :

The principle is old in that it is a combination of the Knapp blow-pipe simply adapted to a burner which carries a piece of lime. It is after the principle of the oxyhydrogen light, with the exception that we use ordinary illuminating gas and nitrous oxide gas. By this I get, as you see, a very powerful white light. In my first experiments it would spit and sputter, but I finally found that the trouble was in getting the gas out of the cylinder. It would persist in freezing. If I blow off about twenty-five gallons, or use a seventy-five- or fifty-gallon cylinder, I get the result which you see here. A light, as Dr. Andrews knows, for photographic purposes, needs to be an intense white light. This light can be used for the projection of pictures on a screen, and for a picture up to twelve or fifteen feet in diameter it is perfect. In a course of lectures by Dr. Dearborn I illuminated a circle of twelve feet diameter, and he said the pictures were fully as well illuminated as if they were shown by his regular operator with the oxyhydrogen light. The plates were the ordinary three and one-fourth by four.

In the illuminating of stereopticon pictures all that is required is a bright spot or line of light; in other words, the whole thing to be reached is to get the most intense white light into the smallest possible spot. After I once get this light in this way, and the cylinder of gas down to where it will blow readily, we can regulate the light by a stop-cock in this cylinder.

WILLIAM H. POTTER, D.M.D.,
Editor American Academy Dental Science.

UNION MEETING OF THE CONNECTICUT VALLEY
DENTAL SOCIETY, THE NEW ENGLAND DENTAL
SOCIETY, AND THE CONNECTICUT STATE DENTAL
ASSOCIATION, AT SPRINGFIELD, MASS., OCTOBER
23, 24, AND 25, 1889.¹

THE meeting was called to order at 2.30 p.m. by Dr. E. S. Gaylord, chairman Executive Committee.

Dr. Gaylord.—Gentleman, the hour has arrived for calling this meeting to order. I now have the pleasure of introducing the president of the Connecticut Valley Dental Society, Dr. S. B. Bartholomew.

DR. BARTHOLOMEW'S ADDRESS OF WELCOME.

GENTLEMEN AND PROFESSIONAL BRETHREN,—Through the courtesy extended by your Executive Committee I have the honor, as well as the great privilege, of welcoming, from all parts of New England and the Canadas, the members of the Connecticut Valley, the New England, and Connecticut State Dental Associations, together with our invited guests from different sections of the country, to the autumnal beauties of Springfield as well as to this dental gathering.

Our good mayor, a few weeks ago, placed a pot of red paint in the hands of the members of a section of the Grand Army of the Republic, who chanced to hold their annual reunion in this city. He bade them enjoy themselves to the utmost. Although I cannot speak with municipal authority, I will say this much, that, if you find less leniency shown you than was shown on that occasion, woe be to any one of our present municipal authorities who shall hereafter demand the professional services of any of the local dental committee who has assisted in completing the arrangements for this convention, for he will proceed to square the account by inflicting the full pains and penalties known to dental science.

It affords me great pleasure to stand in this place as a sort of link between the past and the brilliant future that is before us, and open the door to the work of this dental convention. I am now in my fifth dental decade. It covers a period of the world's his-

¹ Reported for the INTERNATIONAL DENTAL JOURNAL by Geo. A. Maxfield, D.D.S., Holyoke, Mass.

tory in which the arts of peace have attained their greatest triumphs. The impartial historian will place the art and science of dentistry as *one* among the new births or revelations to man's consciousness during this period, out of which is coming the greatest possible good to mankind. Little by little we have seen the flame of incense ascending from our dental altar, representing the full vigor of early manhood, the science of investigation, the restless genius of invention, the spirit of refinement and culture, until the whole world pays tribute to American dentistry. And in this convention I am proud to recognize men who have accomplished their proportional share in this great work. In the fall of 1848 I entered, as a student, one of the best dental offices in Massachusetts. At that time, I believe, there were but four dental graduates in all New England. We were like travellers in a wilderness, with here and there a blazed tree to guide us. It was fortunate for us that there was then no law against any man's experimenting on the dear public to his heart's content. But, notwithstanding all that has been done to reduce dentistry to an art and a science, it has as yet no clearly recognized place in the field of M.D.ism, and will not until the curriculum of study shall be such as to place the graduate in dental medicine and dental surgery upon an equality with the graduate in any department of medical and surgical science.

The tendency is towards the highest possible attainment in all professional life, and the man who stops at the attainment of his D.D.S. will find himself, ere long, barred against associating on terms of equality with the constantly increasing number of M.D., D.D.S.'s.

A calling that would attain to the grand and the great rises above the every-day grad-grind for subsistence, and carries its clan into the realms where work is transformed into the intensest pleasure under the stimulus that comes from the pursuit of the unattained, and draws towards it a constantly ascending grade of mental force and power. Then we may look for a realization, in the near future, of the dream of our advanced brethren who are bearing the heat and burthen of the day, not the dream of Longfellow's alpine youth, whose burthen of strange desire was lost to sight and realization, as he seemed transformed into a lunatic above the clouds, leaving behind him his mortal vehicle stuck fast in snow and ice; not the utopian dream of Sir Thomas More, whose ideal was beyond mortal attainment, but the dream of an educated and scientific art that shall move by the side of and be classed with the learned professions. I expect to live to see the day when the Har-

ward school will, in obedience to a demand, require the M.D. as a foundation upon which to lay the D.M.D.

Gentlemen, may your stay in our city be agreeable to you, and may the sessions of this convention be profitable to us all.

Dr. Gaylord.—Gentleman, Dr. C. A. Brackett, president of the New England Dental Society.

MR. PRESIDENT AND MEMBERS OF THIS CONVENTION,—It gives me pleasure to appear before you and utter a few words in the capacity in which I am permitted to speak. As it was my privilege to say on a former occasion, the occasion of my accession to the presidential position which you now so capably fill, the Connecticut Valley Dental Society is like a home to me. It was the first dental organization to enroll me as a member. Among the members of this society are men who have been to me most helpful as a student of dentistry. From the men whom I now see before me, I think I have gained, in a sense, more courage and help than from any men in the world. So it was a pleasure to come back to its society meetings. It has not been convenient or possible for me to be a regular attendant at the meeting of late years, and I come back as the "prodigal son," not as one having engaged in riotous living,—for dieting on clams is not to be called riotous living,—but I come back in the sense of the prodigal son who has been away for a time from his father's house. If you will kindly let me indulge in a few personalities, I will speak of the way in which I was impressed on my arrival in your city after dark. There was a sense of bewilderment, due to the change of the railroad station. I needed guidance and direction to get out on the main street. Since my last visit, great changes, I find, have taken place; new hotels, new stores, the enlargement of buildings, etc., and enterprise, vigor, and energy appear on every hand. In the morning I rose early and went eight miles to Holyoke, which, only a few years ago, had a population of but ten thousand, and now has over thirty-three thousand, and with positive evidence of life and energy or push and progress that, to a person who has been living in a place where nothing is done in business, was inspiring. The Connecticut River I studied about in school, as a matter of geography, rises in Connecticut Lake, and flows south through Massachusetts and Connecticut, and empties into Long Island Sound. The Connecticut River is a great institution in itself, yet, compared to the Connecticut Valley, is a small thing. The Con-

necticut Valley, with the accompaniment of the Connecticut Valley Dental Society, is a thing of wide extent. We might then bring in a little more geography, and say, the Connecticut Valley is bounded on the north by Montreal; and speaking of this, it reminds me that the society is always glad that it has such a good, big "Bazin." The Connecticut Valley is bounded on the east by Uncle "Dudley," and he spreads over a good deal of territory himself, and will doubtless do so to-day. On the south, by salt water, —let us hope it will never be "Salt River." On the west, by the setting sun. We see no indications that the sun ever will set in this valley. The Connecticut Valley has large dimensions in height, especially here in Springfield, and has always been so. In Boston we have deep water, that, whatever the "Weatherby," we are not likely to have its "Niles" "Leach" away; but here in Springfield you go below water into profound "Mayr." Yet let any man "Hurlbut" a bottle at the fair fame of your society, and we shall all rise in its defence. It is a society we know full well, for you always keep its "Stockwell" up to par. When it comes to largeness of heart and helpfulness of hand, I tell you, Mack, there is no one who can beat "McManus." The Connecticut Valley Dental Society, in times past, has reached some new ideas, and they are ideas that are not likely to become "Snow"d under. Its members have in their time run against a good many snags, and still succeeded in living, but whenever we go to Brattleboro', we are always glad to run against a "Post." The old saying, "it takes nine tailors to make a man," we have heard, but it is demonstrated to us that when it comes to a matter of working on committees or to engineer a steamboat excursion, one "Taylor" is equal to nine ordinary men. Our societies are, in a sense, cosmopolitan. New York can match our "Smith" and "Jones" with their "Robinson."

In all the push and enterprise in Holyoke, I could not help thinking, with all its "Hastings," it is building solidly, and with all its material with which to build, it needs to be to complete the culture of its fields, and the most satisfactory one to meet is its "Maxfield." You know the reason given for giving up the reading of the Bible in the public schools of Minnesota was because it made so much more mention of St. Paul than of the other cities; yet I have never heard any one make any opposition to St. "Bartholomew." Our bishop may be absent, but our "Shepard" is always here. If we could only have our friends from Buffalo with us, we would try to "Barrett." I should not, however, forget that we came here for something else than such things as we have been

speaking about, and I wish to make mention of how much we owe to this society, the Connecticut Valley, and the New England Dental Society, for which latter it is my honorable privilege to speak. Seriously, a very large part of the progress in our art and science that has been made in New England has been accomplished through the pioneers who have kept up their active work in both societies, and have greatly contributed to the advancement of the cause in which we labor. Notwithstanding the time and manner of our calling, a very large proportion of the members of these societies are in good health and in the active pursuit of their calling. I was noticing just before leaving home—and this may be stated as a fact—that the dentists are, as a class, men of good health that bid fair to attain longevity, and are a model of perfect development.

We are very glad to be with you on all occasions, and if we do not come, it is because we are creatures who cannot control all our ways. I thank you for the courtesy of the introduction and for your listening to me. I look for much profit from these sessions in the days to come.

Dr. Gaylord.—Gentlemen, Dr. W. J. Rider, president of the Connecticut State Dental Association.

RESPONSE OF PRESIDENT RIDER.

MR. PRESIDENT AND GENTLEMEN OF THE CONNECTICUT VALLEY AND NEW ENGLAND DENTAL SOCIETIES,—It is my privilege, in behalf of the Connecticut State Society, to thank you for the warm welcome we have received from you, to express the pleasure we have of meeting with our professional brethren, and to discuss some of the great questions pertaining to our specialty. I say brethren, for we are brothers working together to do what we can to ameliorate some of the conditions of life in our fellow-men. And we may congratulate ourselves that the day has long gone by, never to return, when the secrets of the laboratory and the operating-room never went outside the office-door; when what a man knew he kept to himself, jealously guarding from his brother practitioner his own mode of operating. The opposite of this is the rule now, for as soon as a man arrives at any new mode of treating a case, he at once, by a paper read before his society or by an article in some one of the many dental magazines of the day, gives to the profession the results of his researches,—anxious to add his brick to the pile of knowledge.

And this leads me to say that dentistry is fast becoming a liberal profession; no longer narrow or contracted, but bestowing with a free hand the exertions of the mind, as well as the results of the labor of the hands.

I envy the young men coming into practice now; they are starting in life where the older ones are leaving off; they have the benefit of all their researches and experiments; the accumulated knowledge of the past is at their command, and they have but to go on to still higher attainments. They little know the difficulties and discouragements that the student had to overcome in the days when your speaker commenced practising. In the larger cities were some educated men, but the mass of the profession throughout the country was very ignorant. We had but few works on dentistry. I think but two dental journals were published in the country, and they were very crude. No dental societies; and everything that a man knew he kept to himself, so that there was no general dissemination of knowledge on the subject.

And this reminds me of an incident that occurred, one day, while pursuing my studies. I was reading Harris's "Principles and Practice of Dentistry," when I came across the word periosteum. Says I, "Doc., what's the periosteum?" "It's aw—aw—it's; well, it's—you know if you drive a nail in a board, it stands in the board so?" "Yes." "Well, that's it." That was just as lucid as mud. Of course, I knew all about the periosteum and its office in connection with the teeth after that explanation. I am happy to say that that gentleman has kept up with the growth of dentistry. He has enjoyed a large practice in the city of Brooklyn; he had the honor of calling to order the first meeting called to organize the Odontological Society; and was at one time a member of the board of censors that meets at Albany to examine candidates for the title of M.D.S.

The higher ethics of all liberal professions require that each member shall give in full the results of his investigations for the benefit of the profession at large. It condemns the man that takes out a patent on any new method of operating, or instrument, or sells to any one instrument-maker the right to make and vend the same, thereby depriving the profession of the full right to make and use them. It requires that the little that any one man may learn in a lifetime should be given freely in return for the great stock of knowledge he is at full liberty to draw from. Or, as the good book puts it, "Freely ye have received, freely give." When every member of the profession learns this, and lives up to it, then shall

we be truly—and not until then—what we claim to be, a liberal profession. Those of us who paid tribute so long to the rubber company, and fear the rod that the tooth company holds over us, feel the force of what I say.

Mr. Chairman, the future of dentistry looks very bright. Looking back over a practice of forty years, I am impressed with the strides that it has taken.

The advent of the rubber dam, the dental engine, the mallet in its various forms, cohesive gold, and the many other appliances of the day, have revolutionized our methods of operating, and enabled us to arrive at results that the fathers never dreamed of. Reviewing what has been done in the last twenty-five years, who dares prophesy what are the possibilities of dentistry in the next quarter of a century, or what will be the modes of operating? We may congratulate ourselves that there is so much working together for good for the advancement of our profession,—the many dental colleges, where, under competent instructors, a young man may get a good education; the many periodicals, filled with valuable papers, and discussions upon every new thought and thing; the many dental societies, where our best men get together to compare results; and last, but not least, the laws regulating the practice of dentistry in the different States, keeping out the quacks and illiterates, requiring a higher standard of education in the practitioner,—thereby protecting the profession, and insuring to the public a better class of operators. All these things are tending towards a higher standard in the future, and are hastening the day when oral surgery will be fully recognized as a specialty of the healing art.

Thanking you for the cordial welcome we have received, I close with the wish that the auspices of the present moment may continue, insuring the success of this our first union meeting in order that it may be an enjoyable one, and of great profit to all.

Dr. W. C. Barrett, of Buffalo, being called upon, responded as follows:

I can only say it affords me great pleasure to meet with you. It is not the first time, and I hope it is not the last. I shall not attempt to imitate the purpose of my friend who was speaking when I entered the hall, for you know little sayings are always put in "Bracketts." I will only say this, I have come once more to meet with you here, and I only hope you will receive as much benefit from me as I shall from you. I know I shall carry away

from here a great deal more than I bring. I have always carried away my head full and sometimes my pockets. It affords me pleasure to meet these friends and to attend these meetings, which have always been profitable, and I am sure will be now.

Addresses closed.

President Bartholomew.—We will now proceed with the regular order of the programme. The first on the list is a paper by Dr. E. S. Niles, of Boston, on "The Inference of Adenoid Growths in Oral Deformation."

President Bartholomew.—Gentlemen, the paper just read is now before you for discussion.

Dr. Porter.—Are we to understand that these specimens shown came from a single mouth or from a number of mouths?

Dr. Niles.—From a number of mouths. They are specimens borrowed from Dr. Hooper. Each bottle contains what was removed from one mouth.

Dr. Morgan.—Do you consider the high-arched mouth or palate the cause of this condition, or is this condition the result of a high-arched mouth?

Dr. Niles.—Of course the stoppage of the passage through the nose, causing mouth breaking, exerts an influence on the palate.

Dr. C. A. Brackett.—This subject, which Dr. Niles has brought before us to-day, I have been led to give some attention to, through a previous effort of dentistry in another place. It has seemed to me a matter of very considerable consequence. My own idea about it—and I make no pretence as to correctness—is that the varying of the upper arch at the sides and the bulging up of the hard palate is in consequence of the deviation of the muscles, through keeping the mouth open. It seems to me, with the very limited attention given to the subject, that I should endeavor to stop this difficulty. As, for instance, in a case of a child breathing with difficulty or noisily, especially at night. In some of these cases that have been operated on he makes mention of very great alarm being excited because the child slept with perfect quietness after the operation. The child was a noisy sleeper, and immediately upon removal of these growths the breathing became so quiet that there was anxiety on the part of the parents, thinking it of some grave consequence. Dr. Hooper says he removes many of these growths with his finger-nail. I think that a dentist is as capable as any person to make the examination. If a case came to me, I should feel justified in making the examination, and under the influence

of nitrous oxide, if the age of the patient made it advisable. I cannot see any harm in making the examination. If I did not feel like doing that, I should refer the patient to some one who had had practical experience with the treatment of this affection.

Dr. Maxfield.—Since reading the paper of Dr. Hooper, referred to by Dr. Niles, which I first saw a few months ago, I have been very much interested in this subject. One thing that Dr. Niles did not mention was that Dr. Hooper says that it was in 1885 that he first removed these growths, and thinks he was the first one to perform this operation in New England. I refer to this because it shows that there is not much known about this affection in the medical profession. A few weeks ago a child was brought to me by her parents to have its teeth straightened. As the child had many of the characteristics that Dr. Hooper attributes to this affection, I advised the parents to have a specialist make an examination of the throat and nose. They did so, and reported that the examination had been a very thorough one, and that nothing of the nature I had alluded to had been discovered, and that the specialist attributed the mouth-breathing to catarrh. I asked how the examination had been made, and they answered, by passing an instrument into the front of the nose. While this examination satisfied the parents, it was far from being satisfactory to me.

Dr. L. D. Shepard.—I have seen a considerable number of the patients that have been spoken of, and quite a number of my patients have been operated upon by Dr. Hooper. I have no question, from what little thought I have given to the subject, that the collapse of the upper jaw is caused or helped by this growth. I have not given any special study to this subject in a proper scientific manner, but almost all the patients with whom I have been familiar, that had this trouble, have also had accompanying it the peculiar conditions of the mouth already spoken of. The essayist did not speak of what has always seemed to me a very interesting circumstance connected with the operation which we have the impression of as being original with Dr. Hooper. You well know, in all bloody operations in the mouth, the difficulty occasioned by the blood passing down the throat into the œsophagus. Dr. Hooper in these operations places the patient prone upon the face, so that the blood comes out of the mouth. All patients, young or old, when etherized, are placed upon the table, face down, head hanging over, and the operation performed by sense of touch; there is no trouble from blood as it drips out into a basin. This has solved with him the whole difficulty of giving ether with a bloody operation in the

mouth. I think this subject a very interesting one, and am glad it has been brought before this meeting. The evidence of this condition is most marked in the patient, and you can recognize the patient the moment you put eyes upon her or him. I have in that way noticed several of my patients, and have sent them to Dr. Hooper, and my diagnosis has been confirmed by him. We all know that mouth-breathing and irregularities of the teeth go together, and we have both in this disease. It is of so recent discovery, it has escaped notice until now. Another feature, and a very prominent fact, in regard to this subject is, it is a self-limited disease. As a rule, it is a disease of youth and not of adult age; my impression is it is very rare to find such a case in an adult.

Dr. Wm. H. Atkinson.—It is useless for me to improvise and talk of principles and facts that we have not been made acquainted with. There is knowledge on this subject which acts without saying. Most of the remarks that have been made are simply surmises. The man who handles the mouth must and will be an expert at it. As to the cause of this trouble we know absolutely nothing. We know indications, and yet every indication, as noted, we do not know, for we cannot pursue it beyond the reach of mental grasp. These pathological growths cannot be because of food formation, but must be from the need of nutrition of the part; they are evidently hard and epithelial-like; the myxomatous matter of the gum is here involved outside of its immediate condition. There is a need of considerably enlarged vessels here, and until these vessels have been enlarged the growths continue. We know so little of it that I only care to emphasize our ignorance, and call for a ratiocination of our voice and mind until, with the inspiration of the moment to guide us, we can retain what we know; until then it will be useless to talk about it. One remarkable case I wish to speak of, where I have made fourteen or fifteen operations to remove the abnormal growths which filled the entire buccal cavity and covered the cheek in folds like the pouches of a chipmunk. If I ever get my saddle-legs on, I will write this case up; it is of too much importance and interest to let go. It was entirely of epithelial growth. I applied a solution of salicylic acid in alcohol, and just cooked the abnormal growth, and was thus enabled to remove it. It had not involved the blood tracts. My place is so much in the possession of my dental friends that I am not always able to put my hands on the specimens I wish to, so was unable to bring them with me. We have not enough to indicate what this pathological growth is.

What this term adenoid means we do not know. It is in this mixture of terms where we shall get into difficulty, and if we are not careful we shall get into greater difficulties from them. We shall be pushed from one supposition to another, until at last we hope to take such a grip that it will be understood by all.

Dr. Shepard.—I think the essayist gave the definition of adenoid, and with sufficient emphasis for all to recognize it. It is a mere name and means gland-like, which, however, does not fully describe it.

Dr. Atkinson.—It is a pouch in contact with the tissue, is lined with epithelial cells, and depends upon them for activity.

Dr. Niles.—As I understand it, this adenoid growth belongs to the glandular growths of the throat, and they are located in the region of the pharynx. They are simply a hypertrophy of the cells of the pharynx. Dr. Hooper says the old fashioned polypus is not the same as the adenoid growth; but, of course, a man who has a specialty of this kind is liable to go to extremes, the same as in other specialties. A young man of my acquaintance says his grandfather died of polypus. This young man goes about with his mouth open, and respiration would be entirely shut out if it were not for the mouth. His parents are very much prejudiced against having anything done. Another case: a gentleman from Chicago came on to me with his two boys to have their teeth straightened. These boys have these adenoid growths, and their father intended to have an operation performed. I succeeded in getting a very good arch, but their parents then refused to have anything done. I was well convinced that nothing permanent would result till this operation was performed. Dr. Young treated them with escharotics. Most of the information we have is mainly from Dr. Hooper, though Dr. Bradbury has made some study of the trouble, and one of the specimens that are being passed around was taken from the mouth of one of Dr. Bradbury's children. I myself have four children which I am going to have examined very soon. I believe they have this growth; they all show indications of it, having the hacking cough. The youngest is about one year old.

Subject passed.

NEW APPLIANCES AND DISCUSSIONS.

Dr. N. Morgan.—I have here a little broach-holder I made for my own use. I was so much troubled with my broaches slipping. This is made from one of the cone-socket instruments,—an excavator. It was screwed into the handle and cut off within one-fourth inch of the handle, then taken out and a hole drilled through,

the size of the broach; next, with a saw a slot was cut half the length of the hole. As you screw it into the handle it squeezes the sides together, thus holding the broach very firmly. I also have here some exploring points that are made from piano wire, simply filed down and bent into the shapes desired. These bone handles are simply needles—such as ladies use for knitting worsteds—cut in two and holes drilled in them, and the wire is cemented in with shellac. These needles can be obtained at any fancy-goods store, and only cost from fifteen to twenty cents a pair,—enough to make four handles.

Dr. J. F. Adams.—I have here a modification of the McLean disk; it is simply a metal disk soldered to the mandrel instead of fastening it on with a screw. This disk is made of brass, and, after it is shaped to run true, the emery paper is glued on, using a solution of dextrine. When the paper is worn out, it is dipped into a glass of water, when the paper will come off. The advantage of not using a screw is that you can use them for sharpening knives.

I also have a syringe here that is home-made. A short time ago I was treating a case of pyorrhœa alveolaris, and I wanted the patient to use a syringe at home to wash out the pockets. I went to a rubber-store and bought a small rubber ball that cost three cents, then took a glass tube from a medicine dropper, inserted it into the ball after enlarging the air-hole, and you see I have a perfect syringe.

I also have here a method for removing roots of teeth. The idea is not original with me, but there are some here who perhaps have never used it. I had a patient where the roots of the teeth that were broken were more or less covered with the gum, which was very sensitive. I took the engine and drilled into each root, then put in a wood screw, and removed all the roots without touching the gum.

Dr. E. A. Stebbins.—In taking impressions, especially of upper cases, I always found, when putting the finger up to hold the cup, that the cup would slip forward. To obviate this, I have had a piece of tin soldered on to the under part of the cup so that my finger rests against it, and the tendency is to press the cup back all the time.

Dr. L. C. Taylor.—A few weeks ago, looking around, I came across a practical little thing for holding the rubber dam, instead of using weights, which are very tiresome to the patient when sitting for a long operation. This holder is made of piano wire bent in the shape of a bow. On the ends are fastened large beads.

A weight is fastened to the bow. The dam is stretched over the ends of the bow, and the spring of the bow keeps the dam stretched out of the way. If small balls are not used on the ends, they will punch a hole through the dam. This is the invention of a Hartford man, and has been placed on the market, and sells for fifty cents.

Dr. E. S. Gaylord.—What I have to present is a little device I have enjoyed using very much. One is a rubber dam clamp and separator combined, the invention of Dr. Clough, of Boston. Another thing I find serviceable in the laboratory or elsewhere is an appliance in the form of a bench-block. It is not my invention, but I have used it several years. It is simply a cork. A hole is bored in the block and the cork is glued in. It is valuable for filing a screw or small article, as they embed themselves into the cork. I have here a band that I have had manufactured for my own use. I use the Bonwill engine. This band is a hard-finished linen thread band and has a core; this does not have any lint, which those who use the Bonwill engine will appreciate. All those of my friends to whom I have sent this band endorse it. Some weeks since, my friend here, Dr. Maxfield, instructed me how to make a splice, and until then I had been greatly troubled, for there is a constant breaking of bands, and the old method of splicing, which must be done with needle and thread, consumed so much time and was so troublesome to keep in order. So, not to be detained when a band broke, I have kept two engines. This now is not necessary since Dr. Maxfield has given me this splice, for there will be no more such trouble with splicing bands. It is a perfect success. I have tried to get the S. S. White Company to put this band on the market, but as yet they have not done anything about it.

Dr. G. F. Harwood.—I have here a vertical jack. All of you, doubtless, know what a jack is. This is made for carrying emery wheels, which will enable you to grind with the wheel horizontal. You can grind either on the top of the wheel or on the edge. These emery wheels are made in Worcester, and you can get them of any diameter. The diameter of this spindle varies about two-hundredths of an inch, so that the wear can be taken up by the screw which it rests upon at the bottom. This jack can be placed on the front edge of the bench and can be connected to a motor or a foot-wheel. I have also drilled a hole in the top of the spindle so as to carry a mandrel such as we use in the engine, and so run the McLean disks. You can do your rough grinding on

the wheel and finish on the disks. The emery wheels are made solid with a soft metal centre so as to fit your mandrels. They come in varying grades, both as to hardness and fineness, running from No. 80 to 150. These grades, which are coarse and soft, are best designed for quick cutting. An instrument, after it has been tempered, should be sharpened on a wheel that is soft, such as will readily give way to the instrument. You, of course, want a coarse one to start with and a fine one to finish with.

Dr. J. K. Wiley.—I have here what are called plate screws, and I use them for regulating, for drawing in and pushing out the teeth. They are steel screws, and can be obtained at any watch factory or of any jeweller. They do the work for me better than anything I have ever used.

Dr. Gaylord.—I had the pleasure of seeing, the other day, something which seems to me to be very promising to future new engines. It is the invention of Dr. Campbell, of New York. You will remember him as the dentist who used to do celluloid work. This is an engine which has a horizontal driving-wheel. It can be placed under your chair out of sight. The foot-piece can be moved around anywhere,—if the legs of the chair are not in the way,—into any position you may wish. The rod comes up back of the chair, and you can attach any of the arms you may wish to it. It works very beautifully. The principle of the engine is the same as in the Bonwill, and you can get the same power and speed. Another very nice feature is that you can fold it up and put it in a case, the size of a violin case, and carry it anywhere. Dr. Campbell will soon put the engine on the market. I think we have something in this new engine which will be a great improvement over any engine now in use. It is out of the way and runs very smoothly. One of the English dentists, to whom Dr. Campbell had loaned this engine for a month for him to experiment with, declined to give it up when Dr. Campbell sent for it, and sent him instead his check for two hundred and fifty dollars. The appreciation of those who have seen it is very great, they are all very enthusiastic about it. It is a valuable acquisition, which we shall probably have, provided it gets into the proper hands.

Dr. W. C. Barrett.—I want to say a few words, and it is simply this, the dentist who attempts to stand on one leg and run an engine with the other is going to be at a disadvantage. For a number of years I have had the most simple contrivance and it has given me more satisfaction than anything else I have ever had. It is a water motor. It is one that does not require more than ten

pounds pressure to run. The motor I have I can cover with my hat. It can be placed beside the chair and makes no noise. I have used it for a good many years. The cord from the small pulley of the engine is carried down and around the chair to the water motor. The valve of course is controlled by the foot, this turns the water on and off; just the slightest amount of pressure by the foot gives more or less speed, and it can be stopped instantly. My advice is to get a water motor and be relieved from all the trouble you ever had in regard to the running of the dental engine.

DISCUSSION.—DENTAL PROTECTIVE ASSOCIATION.

Dr. Shepard.—My appointment to open the discussion on this subject was made without consulting me, but I will try to discharge the duty. All the dentists here present have received one or more of the circulars of the Dental Protective Association. The majority have doubtless laid the circulars to one side without reading them. Some have responded favorably, and others have said to themselves that they would do so at a convenient (future) time. Both those who have not read the circulars and those who have not already joined the Association have made a great mistake.

The impression prevails that the Protective Association was gotten up to resist the claims of the International Tooth Crown Company, and for that only. While it is true that the demands of this company was the incentive as the most important present question to be inquired into and determined, those who have inaugurated this movement have broader and more far-reaching ends in view. It is hoped that a fund of large amount can be raised, which shall be safely invested, and produce an income which may be used now and in years to come in any legitimate and proper manner for the benefit of the profession. At present the profession is menaced by what many feel to be unjust claims from patentees. If we use what rightfully belongs to another we should pay for it. It is universally, at this time, regarded as no proof of right that the Patent-Office has granted a patent. It is the universal practice to test in the courts all patents which are found valuable enough, and not until any patent has had a full and fair trial is it considered to be established and valuable.

Fair and honorable men would not enter into combination and raise a fund to enable them to resist a just claim or freely to use what was not theirs. But fair and honorable men may with propriety combine to raise a fund to secure a full and thorough investigation of the justice of any claim, which may now or in the future

be made for anything about which there may be doubt. The necessity for this and the justice of it rest upon the fact that no individual has himself enough at stake to justify the expense of testing a claim single-handed or the time and financial ability to do this fully and thoroughly.

We live in communities where each man is dependent for his safety and success upon others. No man can be independent. A member of a community has duties and obligations beyond himself. He should pay his debts and support his family as his first duty, but he cannot be absolved from the moral obligation to give of his means, in proportion to his success, for objects outside of his immediate surroundings. All movements for the good of society should not only enlist his sympathy but be helped by him in more substantial ways. He cannot do his whole duty and be clean through and through if he lends his aid only to those objects in which he has a particular and selfish interest.

If these principles are correct, it makes no difference to any one of us whether we use a method which is to be investigated or not, provided that the question is of importance to others of our co-laborers or to the profession at large. Our duty is to assist in every good movement so far as our means will permit. We cannot shirk our duty and let a few do the work for the good of all and retain our self-respect.

In regard to the Protective Association, if you will carefully read the circular and by-laws I need say no more. It is all fully stated.

The object is mutual assistance and mutual protection,—not of every one, but of the members only. If you, while a non-member, get into trouble, the Association will not help you nor even receive you as a member. You are an outsider and must so remain. But if a member be assailed, the Association will take upon itself the investigation of the justice of the claim against him, and, if it is an open question, will assume all the work and expense of his defence.

The ultimate object of the association is that truth, fair dealing, and justice may prevail, and that wrong, bulldozing, intimidation of the weak, and injustice may be met by an efficient defence and overthrown.

While certain claims assume great prominence at present, no one can foretell what other claims may arise in the near future. If we are to judge by the past, there will be many such claims and of a nature little dreamed of now.

I urge this object upon you now, not because we are face to face with a certain company's claims, but because I solemnly believe that if the present movement fails to enlist the full co-operation of the profession throughout the country, it is extremely doubtful whether it will ever be attempted again. I have perfect confidence in the uprightness, steadfastness, honesty, and grit of the gentleman who is at the head of this movement, who is giving his valuable time, working day and night, and for what? That some stranger, a fellow-member in Boston, Springfield, or Hartford, with little business ability or pecuniary means, can be protected in his rights.

I have confidence that the money of the members is in safe hands, as each member has a receipt from the vice-president of the First National Bank of Chicago, a bank of good reputation.

I have confidence that the management of the association is judicious and wise and that the legal talent is able and honest.

I am happy that there are some who are willing to do the work while I have only to pay my paltry ten dollars.

The question has been put to me, as a personal one, whether I have any right, being a licensee of a certain patent company, to join the Protective Association and urge others to become members.

I have carefully considered this question in its legal and moral aspects, and am satisfied that I have the right legally and morally. To establish this position to your satisfaction I must tell the story at some length. A method of practice is invented and comes into quite general use. I use it, thinking it public property. Years afterwards it is patented, and the patent becomes the property by assignment of a company. The agent of the company visits me and asks me to settle for infringement. While I may have infringed legally, I have not done so morally. I offer to settle with him, but he will do so only on condition that I take out a license for future use of the invention, so worded as to be, to my apprehension, untrue, insulting, and degrading. I decline to take the license, and he threatens me that he will immediately apply to the court for an injunction to issue against me. He offers me one of two alternatives, a license or an injunction, a humiliation or a public injury to my business, and wants an immediate answer. After parleying, he agrees to a modification of the license so as to obviate my objection, and says he will send the modified license to headquarters for approval. In a few days he reappears and reads me a letter from head-quarters saying he is authorized to execute the license as modified by me. I have witness to the reading by the

agent of this letter. I then execute the license, pay my money for the license, and for past infringement. The agent then says he must send the license to New York to be countersigned at headquarters. In a few weeks the manager of the company calls upon me, tells me the agent's act was unauthorized, tenders me back my check and the license I had signed, and presents me a new license with the objectionable features, and threatens me with an injunction if I refuse. I find I am caught in a trap; that I have given myself away, and must either sign or fight the company single-handed, and at a disadvantage from having made returns of cases of the use of the invention. This came also, at a time when, from family sickness and sore distress, I had no time, energy, or leisure for a legal contest. I did what I should do again and always under similar circumstances. I signed the license, pocketed the imposition, and was at peace. There was then no Protective Association. What I did I did under intimidation and falsehood. It was as if, on a lonely road on a dark night, a voice cries, "Money or your life!" and life is saved at any expense. The offer to pay for what one had innocently taken of what was claimed as another's property was insultingly spurned and the threat made to blight one's business reputation by a judicial decision that he was an infringer or a thief. It has been universally declared by our courts that a check or note signed under duress or intimidation was void. The obtaining of this license from me was analogous. There is, notwithstanding any expression in it, no abridgment of my full and perfect legal liberty to assail it as though it had never been signed. Ever since that time my resentment at the deception, falsehood, intimidation, and brow-beating has been increasing until now my whole moral nature rises in rebellion against a company which prefers "ways that are dark and tricks that are vain" instead of fair, square, and honorable dealing.

Dr. S. G. Stevens.—If you had at that time gone to head-quarters and made them a tender of legal money enough to cover all their claims against you, would they not have been obliged to receive it in settlement without your taking a license?

Dr. Shepard.—I cannot answer positively. I have understood that some have successfully done this, but I do not know it. It would seem to be a fair way of settling for all that was past. It would also seem to be fair for a man or company that has anything to sell to put a price on it, and the party desiring to buy can decide whether the price or terms are satisfactory, and buy or not as may seem judicious. The acceptance of pay for the past should not be

contingent upon an agreement to buy for the future. Dr. Crouse has had a personal suit brought against him by this company, damages being set at sixty thousand dollars for conspiring to injure its business.

Dr. R. R. Andrews.—Will the money of the Protective Association be used to defend him in this suit?

Dr. Shepard.—Not one cent of the Association's money. At Saratoga, last summer, two thousand six hundred dollars was subscribed for this purpose by gentlemen of the profession, and the American Dental Association, by vote, appropriated one thousand dollars for the same purpose. The suit against him is personal and entirely separate from the work of the Protective Association.

Dr. R. R. Andrews.—Can you tell us who are members of the Protective Association?

Dr. Shepard.—I cannot, and I have understood that it is deemed not desirable that the names or number of members shall be publicly known. Any man can say whether he is a member, if he pleases, but it is considered advisable by the managers of the association that they should keep to themselves the list of members.

It may be of interest to know that the Pope Manufacturing Company have so many patents upon bicycles that they have for years controlled the manufacture throughout the whole country, and that no one could manufacture a bicycle without taking a license from them and paying them a royalty. They have managed the business with a very high hand it is said. One of their licensees, who has paid them about twenty thousand dollars in royalties, resisted their claims and was sued. Mr. Offield, the same gentleman who is the attorney for the Protective Association, defended the case, and got a favorable verdict. The ground of successful defence was that no holder of a patent had a right so to manage the business as to cripple, retard, hamper, or paralyze the business of the country; such a means of managing a patent was declared by the court as contrary to public policy. I have understood that the Pope Company has appealed from this decision. The decision is interesting as showing the drift of patent litigation.

Dr. Bartholomew.—I wish to ask Dr. Shepard if he intends to take out a license for the coming year?

Dr. Shepard.—I do not expect to do so. I am not yet advised as to whether those who have been licensees occupy any different position, legally, from those who have not. It is my intention to act in harmony with the profession, and, now that we have an association for mutual assistance, to do exactly as my attorney, the counsel of

the Protective Association, shall advise. In conclusion, let me urge you all to assist in this movement. There are gentlemen here who have the by-laws for you to sign, and who will be pleased to take your names and money and forward them to Dr. Crouse.

Dr. Stevens.—Perhaps there are some here who have never read the circulars of the Dental Protective Association, and I would like to ask Dr. Bartholomew if he will please read the list of patents now held by the Tooth Crown Company?

Dr. Bartholomew read from the circular.

Dr. A. M. Dudley.—I understand this Protective Association to be somewhat similar to the Association we formerly had here in New England, when some other patents were being tested. We had then what was known as the New England Dental Association. I was the secretary and treasurer, and I can therefore give some information as to what it will cost one if he attempts to do his own fighting on these cases. Some of you remember that every quarter you would receive a notice from me calling for your dollar, and the average cost to each member was eight dollars. You remember, it was a member of this society whose case was made a test case, and the cost of this case in the Circuit Court was paid by myself. You remember our generous friend, the late S. S. White, assumed the liability of this case. After it had gone through the Circuit Court it was again reopened and begun all over, and was again carried through the Circuit Court and decided against us. It was then carried to the Superior Court, and finally was decided against us, and all the costs and expenses were paid by Dr. White. All other cases pending, when this was tried, were kept on file. In the New England Circuit the average expense for each case was sixty-five dollars. So each member of the New England Association, who had paid in only eight dollars, had their costs paid by the association. Now if one attempts to carry his own case through the court he will have, in addition to the expenses of the court, that of the lawyer, who conducts his case for him. Now whichever way you look at it, it is a good investment to put ten dollars into this Dental Protective Association. For by putting in only ten dollars the whole costs of your suit and the lawyer who defends your case will be met from the funds of the association.

Discussion closed.

SEVENTH ANNUAL SESSION OF THE MARYLAND STATE DENTAL ASSOCIATION.

THE annual session was held on December 5 and 6, 1889, at the St. James Hotel, Baltimore, the president, E. P. Keech, M.D., D.D.S., in the chair.

Thursday, December 5, 1889.—Morning Session.

PRESIDENT'S ADDRESS.

GENTLEMEN OF THE MARYLAND ODONTOLOGICAL SOCIETY AND THE MARYLAND STATE DENTAL ASSOCIATION,—Before proceeding to the business which has called us together, I beg to trespass for a few moments upon your time and patience by giving expression to some thoughts which have suggested themselves to my mind as not inappropriate to the occasion. We have met to consolidate a union between two scientific bodies of this State,—the Odontological Society and the Maryland State Dental Association,—with a view of stimulating the members of each to renewed interest in the pursuit of the truths of science, and of adding force and strength to such pursuit by concentration and harmony of action. To the lay world we are only dentists, whose office it is to minister to the human teeth, or to supply their want by artificial appliances. This superficial and erroneous limitation of our professional entity is doubtless due to a defective nomenclature. So, too, the student who has burnt the midnight oil in acquiring a knowledge of the intricate truths of anatomy, physiology, and pathology is a mere surgeon,—chirurgion,—handworker, because the visible demonstration of his knowledge is the skilful excision of a leg or a finger; the theologian, who in the pursuit of his divine science, has grasped the sublime relations existing between God, the Creator, and man, the creature, with all their obligations and responsibilities, degenerates into a mere preacher, whose principal office is to relieve the tedium of a Sabbath evening, or to lull into blissful repose the uncomfortable suggestions of a too sensitive conscience. After all, there is much in a name, even if a rose would smell as sweet if called a turnip. Our profession is a specialty; but this fact, while it certainly enhances its efficiency and usefulness, should not detract

from its dignity. In our day, throughout the whole world, the tendency of all thought and action, both in science and art, is to specialties. So enormous is the multiplication of human knowledge that the average life of man is too short to even grasp, let alone master, it in all its essential details. Hence has arisen the necessity for a division of labor, mental as well as physical. The study of the telescope and the microscope alone, which, as has been well said, "enables the vision of man, far less acute than the eagle's, to range from the fixed stars to the twenty-thousandth of an inch bacteria," would compass an ordinary lifetime. In the mechanical and in the fine arts,—from the building of the Eiffel tower, the construction of the Brooklyn bridge, the breathing of almost life into the dead marble of a dying gladiator or a Venus of Milo, to the fashioning of a lady's slipper or the production of the pin and needle for domestic use,—all are the result of the skill and aptitude of the specialist. So in the science which has for its object the prevention or cure of those ills to which flesh is heir. The eye, the ear, the lungs, the heart, the nerves, the skin, every organ and function of the body, has its specialist. Why not the mouth, the most important of all, if any comparison be admissible between organs, each of which is necessary for the healthful and perfect operation of the whole? No one of these specialties is in itself a science. Oculism is no more a science than dentistry; dentistry no more than orthopedy. The proper understanding and practice of each do not depend upon its exclusive study,—as well expect to learn to swim in a bath-tub. The mental vision of the student must take a wider range. The would-be swimmer must strike out boldly into the wide lake or wider ocean. The vital phenomena of organized bodies, the composition and certain properties of material substances, the structure of organized bodies as learned from dissection,—physiology, pathology, chemistry, and anatomy,—these are the four great streams of science, separate and distinct, but together forming the one pure fountain from which every one who aspires to real eminence in any one specialty must drink deeply, or fail in his aspirations. We of the dental profession, gentlemen, have reason to congratulate ourselves upon the progress which, as a scientific calling, we have made. But yesterday we were sneered at as artisans,—hand-workers; to-day the curriculum of no respectable medical school is considered complete without a chair of dentistry. Perhaps no branch of the healing science has made such great progress and bestowed upon mankind such lasting benefits in so short a time as ours. The one discovery alone of the unfortu-

nate Morton, the application of chloric ether to the operations of surgery, caused the great philosopher Lecky to assert that "the American inventor of the first anæsthetic has done more for the real happiness of mankind than all the moral philosophers from Socrates to Mill." True it is that we have not yet weeded out the ignorant charlatans, whose flaming advertisements and huge signs, hideous with grinning teeth and blood-curdling instruments of torture, still greet us in the thoroughfares. But let us hope that their day of darkness is short and will soon come to an end, to be succeeded by a race of practitioners to whom the steady beam of the pure rays of science will be more precious than the meretricious glitter of the vulgar shekel. The union which we are about to form can accomplish much in this direction. Science is not art, nor is art science. Yet each is necessary to the other, and should be inseparably blended. The former without the latter is a tree without fruit; the latter without the former is fruit, but dead-sea fruit, which turns to ashes on the lips. The practice of the healing art, in all its various specialties must mean, and in truth be, the application of the knowledge derived from the study of the four pure sciences which I have named, or it must be mere handicraft applied haphazard, without certain and known results. As tending directly to this much-to-be-desired consummation, it is gratifying to note the action of the National Association of Dental Faculties in the adoption of resolutions requiring the colleges to exact an examination preliminary to matriculation, and compelling students to attend a three years' graded course. This is an upward step in the right direction; and, in connection with two other great reforms,—the exclusion from the graduating class of mere practitioners of five years' standing, and the establishment of the graded course with preliminary and junior examinations, to both of which we are indebted to this same admirable association,—will at no distant day entitle the dental profession to an equal rank with any other body of scientific men, in dignity, in usefulness, and in education. The theme, gentlemen, as it unfolds itself before me is an inviting one, but I must kindly forbear and permit you to go on with your work. My purpose is to stimulate the thought, and to help the effort which is now happily reaching out everywhere for the higher and better education of our useful profession, in which, I am sure, I have the sympathy of every one of you, and which, I feel very certain, will be greatly promoted by the union which we are about to form.

Many thanks for your kind attention.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

Dr. A. J. Volck.—Among the subjects presented by the president there is one which, I think, ought not to be allowed to pass without some special reference to it, and I desire to say a few words upon it. I refer to the allusion to the fact that, with but one exception, no dental society in the city of Baltimore or in the State of Maryland has ever succeeded.

Mr. President, you have handled that subject very tenderly, very daintily, and, I may say, with kid gloves. It is therefore right that somebody should handle it with the bare knuckles. The cause is not properly attributable to the fact to which you have referred. The cause lies in the difficulty between the two dental colleges in this city. And the sooner these colleges arrange the difficulty the better it will be for themselves and for the profession. Both are marshalled under the same banner; both are laboring to promote the same good purpose and the same great object; and I undertake to say here that the man who, as president of this association, will take this matter in hand, and will bring these two colleges together and have them join hands (and it may be your duty, Mr. President, to do it; and if so, may you succeed), that man will deserve the thanks of the profession of the whole State, and not only of the profession of this State, but of the profession at large. We have in this city the first dental college ever established in the world, and this fact should stimulate us to assist in any effort to remove the difficulty referred to. We are, as the president has well said, a body of men perfectly able to make a dental society successful, to undertake all the business and to perform all the duties of such an organization, but this same difficulty has constantly confronted us. If the members of the faculty, or the graduates of one college, are seen two or three times in a meeting of a State society, or in any other society, those of the other college uniformly stay away from such meetings. When we propose to elect an officer, we have to be very careful not to select a gentleman who has any connection with either one of the colleges, lest one of them should be given advantage over the other.

That is the cause, the only cause, why no dental society, with one exception, has succeeded here. I wish to call particular attention to that one exception. There is one dental society that has succeeded. It has not been in existence for more than a year and a half, but it meets monthly, and is a source of great benefit to its members. Its membership is made up of men who do not tolerate

any jealousies of one another, who entertain the sincerest feelings of good fellowship, who come together for mutual improvement, and to have a good time. I make this statement because I do not want it to go upon record that no dental society in Baltimore has ever succeeded. The Association of Dental Surgeons of the city of Baltimore has been eminently successful, and it is a society in which there is not a speck of decay.

Afternoon Session.

H. B. Noble, D.D.S., Washington, D. C.; read a paper on

DENTAL HYGIENE.

Health being the corner-stone of all good work, either of body or mind, it should be the aim of every one to study and work for it. Our body is governed by fixed laws, which, if violated, will bring trouble just in proportion to the extent that the laws of hygiene are disregarded. The dentist, of all men, cannot afford to be careless of his health or of the laws of hygiene so nearly allied to it. A good dentist means a healthy, clean man; his personal habits must be those of a gentleman. Out-door exercise, in the pure air of heaven, should be regularly had by walking or riding.

In choosing an office, its hygienic surroundings should always be considered. Light and ventilation are two of the essentials. Light is of the first importance; north, south, and east, each has its advocates, and each has its advantages and disadvantages. From experience and observation we believe a southern exposure and south light the best; there are health-giving properties in every ray of the sun; it is the strongest and longest, and if properly regulated by white curtains in the middle of the day, you have an all-day light, and a friendly assistant, giving health and cheerfulness to all. In the middle of the day, in the summer months, when the direct rays of the sun are oppressive, before it reaches the south window it is so high it does not give you its direct rays. Our hottest weather is almost invariably accompanied with southern breezes, giving us good air as well as light.

The east is a good morning light, but is weakest at the closing hours of the day, just when one is tired and wants the best light possible. The north is a steady light, is not as changeable as a south light, and is claimed, by artists, to bring out the difference of shades of color with more distinctness than any other; but for our work, where strength is the element most needed, it is not equal to a southern light. A west light should never be chosen if

either of the others can be had, as it is weak in the morning, and the direct rays of the afternoon sun must be shaded from a patient's face, making it unpleasant and weak when you get it.

Plenty of air and good ventilation should always be in order. The operating-room should be large and airy, and the best and brightest, not a little back corner, poor light, worse ventilation; privacy is all very well in its way, but not to the exclusion of light and good ventilation. Pure air and plenty of it is of prime importance to health; yet how little regard seems to be given to it, judging from the close medicinal odors that greet our olfactories in many of our dental operating-rooms, charged with the concentrated odors of creosote, carbolic acid, iodoform, and half a dozen other vile-smelling compounds, sweetened, perchance, with the odors of dead pulps, foul teeth, and sour stomachs. We get so accustomed to these vile, unhealthy odors that no effort is made to correct or remove them, requiring both patient and operator to exist, not live, in them day by day, until insulted nature rebels at this foul treatment, and enters her protest through headaches, backaches, weak eyes, and the last more fashionable trouble, "nervous prostration;" if he dies, they call it "*heart failure*," the last undoubtedly correct in all cases of death; but which gives not the slightest hint or indication of the primary cause of the disease.

Have all odorous medicines in glass-stoppered bottles, and in a closed case.

It is not necessary to smear your instruments with creosote and iodoform, and so inoculate your person and clothes as to advertise your calling. I have little doubt that disease has been communicated by foul, unclean nerve broaches, which always should be disinfected after using. No instrument that has been used should be put into another mouth until carefully cleansed.

The laboratory should, if possible, be a large, light, sunny room, with good draughts and ventilation; not the little back closet or dark cellar, so often seen; light and air must be had if good work is to be done.

There is no profession so likely to neglect exercise in the open air as the dentist, with a tired back to call and urge him to the lounge or easy-chair, when he should be filling his lungs with pure air by riding, driving, or walking.

The dentist has duties in hygiene outside his own health that should engage his attention; children and parents need advice, as well as professional work. How few persons, especially children, do we find who take proper care of their teeth? It should be our

duty to instruct our patients in the duty of properly cleaning their teeth, and to give careful, minute instructions as to the manner of using the brush, so that there shall be no food for the bacteria to build nests for work on the pearls we are to watch and preserve. Instruct your patients that it is not the sweet things but the acid produced by fermentation in the mouth that decays their teeth.

Study the general health of your patient; it will often give you a clue to some hitherto misunderstood trouble. No part of our body can be diseased but it affects, more or less, every organ and tissue.

Nothing but a constant study of the laws of hygiene will enable us to ward off disease, especially that of the oral cavity, which we, as dentists, are called to look after and to treat; and as prevention of disease is better than cure, it becomes us to see that we are competent instructors in the laws of hygiene in its relation to the oral cavity.

We should educate our patients to greater care in the sick-room, that some antacid or mild germicide like listerine be used to rinse the mouth, as nearly all conditions of the sick are favorable to active bacterial growth, especially so in fevers, and many a bad decay dates its beginning from the sick-room, and we should improve every opportunity to urge our medical friends to greater care in this direction.

We should instruct children in the use of the tooth-brush, and oftentimes the parent needs the instruction and advice quite as much as the child.

Let us emphasize the mouth as a hygienic organ, whose functions, I fear, have never been properly appreciated by the medical profession, or overestimated by the dental. Health depends on good blood; unhealthy food, whether from inherent defect, bad cooking, or imperfect mastication, will not make good blood. The caterer of the stomach is the mouth, and disease there will tend to vitiate all the supplies of the stomach. How much of our food reaches the stomach through the portal of a diseased, and often a filthy mouth that is not in condition for proper mastication and insalivation in this active office of preparation, and thus is improperly prepared for passage into the alimentary canal.

Nature, in her prodigal care for the health of all her creatures, has placed at the portal of this great alimentary highway the teeth, which, for fitness for their functions, cannot be surpassed by any other organ of the body.

All healthy food must have its wedding-garment on, and this

can be obtained only in the mouth, where a semicircular band of trained soldiers stand shoulder to shoulder to give welcome to the guests of the body.

Dr. J. Y. Crawford, in his address to the Southern Dental Association, at Galveston, last August, gave a vivid description of these guardians of health when he said,—

"The first effect is upon the nervous system. The grateful smell, as the food passes the lips, salutes the plexus of nerves that engrave with rich tracery the nasal arch and is conveyed to the sensorium. The lips open and the teeth seize the delicious morsel that comes thus heralded. Every nerve of taste tingles with gustatory pleasure, and summons, as with an electric bell, the liveried servitors who wait in this banqueting house of the gods. From lip to pharynx, floor, wall, and arch pour out their welcome. The nerves of taste carry joyous messages to the brain, and throughout the whole system glands—labial, buccal, palatine, molar, and lingual—open mouths of welcome on the free surface of the mucous membrane, and pour libations along the margin and dorsum of God's banqueting-table, the tongue. The *major domo*, the steward and the butler, the parotid, the submaxillary, and the sublingual glands send up from the cellarage salivary nectar through the ducts of Steno, Wharton, and Rivinus. The incisors carve, cuspids pierce, bicuspidæ tear, and molars grind around the whole royal arch from condyle to symphysis,—divine cutlery and plate, not of steel nor of silver nor gold, but of peerless enamel,—till at last the precious mouthful is delivered to the constrictor, stylo-, palato-, and salpingopharyngei to be safely conveyed through the œsophagus to the stomach, where it is taken up by the systemic economy and the digestible converted into chyle and blood to nourish the body, and the indigestible rejected and excreted."

This intricate machinery, so graphically described by our Southern brother, requires to be kept clean, if we would not poison the body, at every meal, by mingling with the food particles of decayed animal or vegetable matter.

Mingled with such carrion juices and micro-organisms, the most delicious food reaches the stomach in a condition destructive to health.

Scientific investigations have demonstrated that micro-organisms are potent disturbers of the normal conditions of the body, and are prime originators of many diseases, and the continual swallowing of these fungi in great numbers may produce serious disease.

Many of the diseases incident to childhood are now believed to be aggravated, if not induced, by these bacteria, and in many cases can be mitigated, if not prevented, by maintaining clean and healthy surroundings, especially that of the mouth.

Dental art and science is, we affirm, a most important branch of the healing art, and should be taught in all our schools, not in the cursory, indifferent manner natural to those who have not given it special study, but should be taught by those trained in dental schools, and who feel and know its importance.

The lack of proper care of the teeth in early youth often causes ill health and suffering, and this because the child, or parent, had not been properly instructed in the care, or importance to health, of good teeth properly articulated.

The dental surgeon who has preserved the teeth from decay has preserved the health, and rendered life more comfortable.

Let us as watchmen and guardians of the portal of this sacred temple see that nothing enters to deface any of the pillars that adorn the oral cavity, or that shall detract from their beauty; thus our patients' teeth will be like those described by the prophet Solomon,—

"His teeth will be like a flock of sheep that are all even shorn."

DISCUSSION OF DR. NOBLE'S PAPER ON "DENTAL HYGIENE."

Dr. R. B. Winder.—A valuable paper such as that which we have heard ought not to pass without due acknowledgment and the discussion to which it is entitled. We shall doubtless all agree as to the necessity for special education in this direction. There is nothing in the paper that can be harshly criticised, all its points being well taken, so far as I can see. The want of proper hygiene is very clearly indicated by the secretions of the mouth becoming vitiated, especially in low forms of fever. Under these circumstances decay in the teeth takes place rapidly. We all know now that caries of the teeth is caused by the presence of bacteria, and that these are generated in vitiated secretions. Since it has been demonstrated (and I consider that the fact has been clearly and absolutely demonstrated) that the health of the teeth depends on the chemistry of the mouth, it is obviously of the utmost importance to keep the mouth as clean as possible under all circumstances.

I regret to say that I am compelled to concede the truthfulness of all that has been said by the essayist in regard to what I may

term the almost criminal neglect on the part of medical men *per se* in the matter of dental hygiene. This is so apparent that it might well be inferred that the teeth are ignored by them, or are regarded as undeserving of their attention. I do not say this in any unkind spirit, because I entertain the highest respect for the medical profession, but I mention it as showing that dentistry has not been incorporated in the curriculum of the medical student, and that the text-books practically ignore education in this direction. It is for this reason that dentistry is to-day a profession separate and distinct from that of medicine. The attempt was made in the early history of our profession to secure the co-operation of medical men in our work, but it proved ineffectual. I can give you no more striking illustration of the consequences which follow from this condition of things than that which was shown in a case in my own practice a few years ago. The case was that of a lady in feeble health, who applied to me to have her front teeth extracted. Her physical condition was not, in my judgment, such as to warrant the operation, and I suggested a preparatory method of treatment, to which she assented. I then inserted plastic fillings for temporary service until gold fillings could be put in. This was in the month of February. About the last of the following May she sent for me to come to her house, and, upon visiting her, I found that nearly all of the oxyphosphate fillings which I had inserted had been dissolved or washed out, this being due to an alkaline reaction from the saliva or secretions of the mouth. The decay had reached close to the pulp at certain points, and the sufferings of the patient were consequently quite severe. While it was apparent to me that the secretions were strongly alkaline, she informed me that she had been required, by her physician, to abstain from the use of acids because they would aggravate the indigestion from which she was suffering. I had said to her, in a humorous way, "You have been indulging in too many pickles, too much acid;" when, throwing up her hands in alarm, she assured me that her physician had strictly prohibited acids, although she had a most intense longing for them. Upon learning that her physician was a gentleman with whom I am well acquainted, one whom I knew to be a progressive and intelligent member of his profession, I took the liberty of preparing for her a lemonade, and advising her to make use of acids; in other words, I suggested an acid treatment. When her physician, in compliance with the request I made to her, called upon me, he assured me that my diagnosis of the case was absolutely correct, and, instead of objecting to what I had done,

expressed his obligation to me for it. I had been fully confident, however, that in what I did I was not acting upon any uncertainty as to the kind of treatment the patient needed. I knew that oxyphosphate fillings would resist the action of all acids, but were easily dissolved by alkalies, and particularly by ammonia. I realized at the outset that the diagnosis of her physician was faulty, for the reason that, instead of making a test of the secretions of the mouth to ascertain whether they were alkaline or acid, he had arbitrarily assumed that her condition was acid. The result was that, after the patient had been placed on an acid treatment for a couple of months, her condition showed marked improvement; indeed, I have rarely seen more decided evidences of rapid recuperation than were shown in the case of that patient.

That was one instance corroborative of what Dr. Noble has said in regard to the condition of the mouth being absolutely overlooked by the attending physician, and the duty which is sometimes imposed upon us in forcing the matter upon the attention of the physician. In ill health the secretions of the glands become vitiated, and decay in the teeth results; and it often happens that when a patient whose teeth we have preserved in good condition returns to us, after a spell of sickness, we find that our work is a wreck, and that previous operations must be repeated, when a little care and attention on the part of the physician would probably have prevented this.

In the case of which I have spoken the use of litmus paper would have enabled the physician accurately to diagnosticate the condition of the mouth. This paper is blue and red. The blue, when applied to an acid, turns red; and the red, upon touching anything that is even slightly alkaline, turns blue, thereby furnishing a very delicate means of testing the mouth. If tested by this means, the physician would have found that the condition of the mouth was alkaline, not acid, and he would have prescribed acids instead of restraining the patient from the use of them. The symptoms, in sickness, which are indicated by a furrowed tongue and a constant bad taste in the mouth, are well known; and if the physicians would devote the requisite attention to these and kindred symptoms, their treatment would prove more effectual and salutary.

In regard to what has been said in the essay about the arrangement of an operating-room, with reference to light and in other respects, I desire to say a word, as the subject is one of general interest to the profession. I have never yet seen an operating-room the arrangement of which was, in my opinion, based on

scientific principles. I agree with Dr. Noble in all he has said concerning the necessity for ventilation, the ingress and egress of pure air, and the avoidance of all disagreeable odors. Some practitioners would have in the office all the light that they could possibly get. I suggest that what we want are direct rays of light, and that we do not need to have a reflecting surface from which those rays may be returned or reflected back as from a looking-glass. I think that which is most desirable is an arrangement similar to a photographer's, with a background, and so arranged that, when they have passed beyond your head-rest, the rays may stop and be absorbed. I repeat that the best arrangement seems to be one by which you have a direct light upon an objective point, without any returning or interfering rays.

With regard to the color to be used in the papering of the walls of an operating-room or office, I suggest that if our preference is to be determined by the fact that nature has clothed the earth in a certain color, we should of course select green. An additional consideration in favor of this color is to be found in the generally-admitted fact of the beneficial effect of green in resting the eyes. The shades usually worn over the eyes of students are of a green color. I can say, from my own experience, that, having at one time had a laboratory commanding a view of surrounding foliage, I often experienced a sense of relief, when engaged on critical work, in looking out upon the green fields and trees within range of my vision. There is, however, a consideration that may be urged as an objection to this color, and that is, that green-colored wall-papers, as I have learned from manufacturers, are made by an arsenical preparation, and therefore may contain poisonous substances which would have a deleterious effect upon the atmosphere of a room or in some other way prove prejudicial to health.

Dr. Wm. A. Mills.—Mr. President, I was glad to hear Dr. Noble call attention to the character of some of the colored papers on the walls of our offices, and particularly in the rooms in which we operate, and in our sleeping-apartments. I regard this as one of the greatest sources of danger to which members of our profession could expose their lives. I know of an instance in which a family was poisoned (though the cause of the trouble could not be ascertained at the time), where it was afterwards discovered that the curtains or hangings in their apartments had been prepared with arsenical compounds of some kind. I think that in advocating hygienic laws, and seeking to make a practical application of them in the arrangement of our dwellings and offices, we ought to be

very careful in the selection of paper-hangings, and that we ought never to prefer green as a color.

Dr. A. J. Volck.—Mr. President, why not follow the rule which is followed by the artist in a matter like this? The artist wants a concentrated light upon his easel just as we want it upon our patients. He papers his operating-room with colors which are absorbents of light. Therefore he prefers, generally, a maroon or some dark-gray or broken color such as you find in gray wrapping-paper. I know of one studio in New York which is covered with hemp cloth, which material not only makes a very good appearance, but an exceedingly pleasant appearance to the eye.

Green is a very good color when looked at in the open air; the effect presented by green woods or green fields is very pleasant; but a room, the covering of which is wholly of green, is one that affords no relief to the eye, and is anything but a relief to it, because the green reflects the light more than does maroon, gray, or other colors. It does not absorb the light as those colors do. Green is a secondary color, while the others are tertiary. Being less positive, the other colors are more pleasant to the eye.

Dr. Charles D. Cook.—Mr. President, having come in late and heard only a portion of the paper, I do not think I can add anything to what has already been said. If I may be allowed, I will make one suggestion, and that is, it is customary for dentists to speak of dentistry as though it were a profession separate from and independent of the medical profession; those who hold the degrees of M.D. and D.D.S. are in the habit of speaking of it as a profession; whereas they should recognize dentistry as a specialty. I think we ought to treat the general practitioner and the dentist alike as medical men; that the general practitioner should be known as such in contradistinction from the dental specialist; and that we ought not to assume that our art or our practice is fundamentally different from that of the general practitioner.

In our code of ethics we almost invariably start out with the proposition that dentistry is a specialty of medicine, and that we are medical men. The tendency now, among teachers and among the more advanced of our brethren, is to train dental students not only as specialists but as medical men. In our colleges such students are, I think, being trained from a medical stand-point, as they have been in England for the last twenty-five years. In London, the dental student receives the same training in anatomy, physiology, therapeutics, etc., that the medical student

receives; the teachers being the same for each. At the examination in the Royal College of Surgeons, where the degree of L.D.S. is conferred, there are two special examiners on the specialty of dentistry, who are also members of the Examining Board of the Royal College of Surgeons. The only difference between the two classes is that the dental students receive a special training for their work, in the filling of teeth, in making obturators, etc., and have a special school just as the oculists have. So that, practically, all the graduates are medical men, but the dental students receive this special degree. I think we owe it to ourselves to speak of our practice as a specialty, and to drop the term "profession" except so far as it applies to the general profession of medicine.

Dr. H. B. Noble.—Mr. President, I have but a few words to say. One of the positions which I have taken has been freely criticised, but all the speakers have agreed upon the main point. In regard to the papering of our rooms, much that has been said may be found to be of value. I think that the question as to the most advisable color to be made use of should receive more attention than it has yet received. I am not prepared to say what color I regard as the best, but undoubtedly there are certain colors which are preferable to others. I think that the subject has been sufficiently ventilated to lead the members to consider it thoroughly, and that the result of their deliberations may eventually enable us to get our offices in as perfect order and condition as is possible.

Subject passed.

Editorial.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE question has been raised as to the propriety of changing the time and place of meeting of the Association. It is argued that those members desiring to go abroad the coming summer cannot defer their departure later than the 15th of July, and that, even if they could, the meeting of the American Dental Association, if held at Excelsior Springs, is out of their way. Unless a change is made in the time and place of meeting of the American Dental Association, then it seems that a movement to change the time and place of meeting of the Association of Faculties in order to accommodate those members who desire to attend and also go abroad might well be taken. It is essential that a full representation of the colleges belonging to the association shall be had this year on account of the important measures which will undoubtedly come up to be acted upon, and if the meeting is held in the extreme West, and at the time of the meeting of the American Association, we fear that the attendance will be small, a result very much to be deprecated. The Association did not complete its labors when it voted to establish a three-years' course of instruction. It only entered upon its real work, and it must now see to it that this step in advance is carried out. There are a number of questions yet to be settled in order to set the machinery in motion, and get it to running smoothly.

It is barely possible that some changes may yet have to be made before the measure is accepted by all the colleges connected with the Association. The question has been before the members for a year, and time has been had fully to consider the movement in all its bearings, and there will undoubtedly be some honest objections made to its adoption as it stands which will have to be met and considered, and which will possibly modify the standing resolutions. It is a movement of great importance, and wants to be entered into with caution. We do not desire to be understood as indicating

that there will be any backward steps in the matter, but there may need to be certain modifications so as not to work a hardship upon any institution connected with the Association. Great care must be exercised in drawing the lines so as not to force any institution out of the Association. Unanimity of action is absolutely essential for the full success of the measure. The question of the equalization of the fees will come up at this meeting, and is going to require careful consideration not to work an injury. This does not affect the weaker institutions so much as the stronger ones, and they may be the ones to object, especially the State institutions, which, by reason of being connected with State universities and receiving State aid, are not able to control the question of fees. Then, again, the question of *time service* must needs be considered.

Those institutions which have already adopted a lengthened course, if they are compelled to establish a three-years' course, will labor at a considerable disadvantage. For instance, a college having a two-years' course of nine months each is already giving more actual time to their students than an institution which may adopt the prescribed course of three years of five months each. It seems that it would be more equitable for the Association to establish the time actually to be spent in attendance upon lectures, and allow the different institutions to elect how they will apportion the time. Let the minimum time be set at eighteen months actual attendance, and let that time be divided into three years of six months each, or two years of nine months each. This question will undoubtedly be brought before the Association, and presents features that are to be commended. If a nine-months' course should be adopted, the college year could be divided into three terms, of three months each, and students could matriculate at the beginning of any one of these terms, and receive credit for the actual time spent in attendance. A graded course could be established, and an examination made upon the work done, and, if successful, a certificate given which could be presented at any other institution for just what it called for, and credit be given therefor; and when a student could show certificates for eighteen months' attendance, he could come up for final examination, and receive his diploma at the next regular commencement. Such a plan would work a special benefit for those institutions that are short of clinical material, by extending the course over a greater length of time, and thus distributing the year's work more evenly. When the course is limited to five or six months, it draws heavily upon the material at command to supply the needed demand. It would operate also to lessen the

number of demonstrators employed, as the class could be divided into smaller sections. Better demonstrators could thus be engaged by employing a less number and extending the time of service to the entire year. Such is, however, only a few of the questions that have been presented to us. The different institutions have their own peculiar difficulties to contend with, and these are more or less aggravated by the proposed compulsory change in the established course, and there will, no doubt, be several knotty questions brought before the Association for its deliberation which will require time and a full attendance wisely to consider and pass upon.

The meeting of the Association of Faculties seriously interfered with the success of the American Dental Association last year by taking from the latter many of its active members, and as there is not the same need of itinerancy upon the part of the Association of Faculties as there is on that of the American Dental Association, would it not be well to call a meeting of the Association of Faculties the first week of July, at some more central point than Excelsior Springs, say at Niagara Falls? This would accommodate those members who desire to go abroad, and insure a full attendance, and not in the least interfere with the meeting of the American Dental Association.

AMERICAN DENTAL ASSOCIATION.

THERE seems to be a strong feeling still existing in the minds of the profession that the American Dental Association should meet in the East this year, and at an earlier date than usual, notwithstanding the fact that the question has been once voted upon by the Executive Committee and the officers of the Association. There is a movement on foot to petition the powers that be to make the change. The ground taken by those who are foremost in the movement is that a large number of the members of the Association desire to go abroad, and that if the meeting is held in August, and at Excelsior Springs, they will be unable to attend. There can be no reasonable objection raised against the change in the time and place of meeting of the Association, except that of fickleness, and the evident willingness, on the part of some, to make the American Dental Association secondary to other meetings. It was known last year that, in all probability, the International Medical Congress would be held at its usual time, and the question of

conflict in the two dates was discussed, and the time and place of meeting decided upon in the light of that knowledge. It seems to us that then was the time to have raised objections, and not at this late date. Then, again, the Association has been promising for a long time to go to the Southwest, and now that the promise is on the verge of fulfilment, it does not seem just right to vote to go elsewhere. At any rate, if the change is made, it should be with the explicit understanding that it is to return next year to Excelsior Springs, and thus fulfil the promise made to the Western members; and then it can go to Chicago the following year, when the grand memorial meeting is to be held. The Southwest has waited patiently for an opportunity to show its hospitality, and it should not now be deprived of the privilege. Under the circumstances, however, it seems best to make the change asked, as all are, or at least should be, anxious to see the section on dentistry in the Tenth International Medical Congress made as great a success as possible; and if the Western members will allow the change to be made, their magnanimity will be fully appreciated, and the return meeting, next year, will be all the greater success. The meeting could be called for Niagara for the second week in July, immediately following the meeting of the Association of Dental Faculties. The coming meeting of the association will be an important one, as arrangements should be started looking towards a grand meeting in Chicago in 1892. Committees should be appointed and a plan adopted in order to insure that that meeting shall be a success commensurate with the importance of the occasion.

A CALL FOR AN INTERNATIONAL DENTAL CONGRESS.

On another page may be found a circular issued by the New Jersey State Dental Society, for a meeting of delegates from the different dental societies of the United States, looking to the issuing of a call for an international dental congress, to be held in 1892. When the circular was sent out, the location of the World's Fair was still in doubt, and the doubt seemed to be in favor of New York; but now that the Queen City of the West has captured the prize, it is barely possible that the New Jersey State Dental Society may not be so anxious to inaugurate the movement as it was.

The *Archives* has expressed itself as opposed to the calling of a meeting as proposed by the circular, and so must we. If such a meeting is called and a movement started to establish a congress, it will not represent the profession in America, but a small faction in the East, and will not meet with hearty support. Any movement that looks towards taking the control of the World's Fair meeting out of the hands of the American Dental Association will meet with sharp opposition. There is a fixed sentiment in the profession that any credit or benefit to be obtained from such a meeting should accrue to our already existing associations. The leading journals have expressed themselves in that way, and any attempt to use the occasion or the meeting for individual ends will meet with strong opposition from this journal. Let us throw aside all politics in the matter and make the meeting one of the grandest in the history of the American Dental Association, one noticeable for its high scientific value.

Let us not have a repetition of the difficulties which arose in the organization of the Ninth International Medical Congress, when a small faction tried to take the control of the congress out of the hands of the American Medical Association. The American Dental Association bears the same relation to the present movement that the American Medical Association did to the congress. All such movements should be under the control of delegate bodies in order to insure success, and that is the reason we have so strongly favored placing the whole matter in the hands of the American Dental Association.

Foreign Correspondence.

TO THE EDITOR :

Thinking that cocaine notes may still be interesting, I send you those of three cases that with me lately have deviated from the ordinary run of success.

For a lady patient, twenty-two years of age, I injected ten minims containing in solution one-half grain of cocaine, intending to extract the roots of a lower first molar. The part was entirely insensible, but she, fearing great pain and knowing the instrument about to be applied, made it impossible to operate without force, which I did not attempt. I tried to persuade her, but after five

minutes I saw she was getting uneasy and commenced convulsive movements with her hands. They were not cold, neither were the lips or face blanched; the pulse was good, but the breathing rather troubled. After all tight clothing had been loosened and strong smelling-salts used, everything seemed to get natural, and her mother fixed her for leaving; but no sooner had her corsets been fastened than the old trouble reappeared increased. She was again relieved and aroused from a faint, and brandy was given; and I found the best thing was to get her on the floor, where she lay for about an hour in an hysterical fit, breathing jerkily. I called in a doctor, as I had never met with such symptoms before with cocaine, but he pronounced it only hysteria. She awoke all right and left for home.

The second case was a gentleman about fifty years of age. He had been suffering all night from an exposed nerve in an almost invisible distal cavity of a second upper molar, and a doctor, to relieve him, had at different times given him two weak injections of morphia over the mastoid process; but as he got no relief, I was summoned in the morning. I injected half a grain of cocaine, having told him before that I could save the tooth; but no, he wanted it out. However, no sooner did he feel the pain gone than he changed his mind and asked me to treat it. So I put in a dressing of carbolized resin, and was about to leave him, when he complained of sickness, and his face looked distressed and his lips blanched. I had no ammonia with me, as we were in a hotel, so I bathed his face and opened the windows; he seemed set against brandy, so we tried some Chartreuse, which, acting like a charm, speedily relieved him.

The last was a boy of seventeen years. I was injecting cocaine slowly, but no sooner had three minims disappeared, when I found him fainting. He was very anæmic and weak. Later on for him I operated without an anæsthetic.

Looking back over three years' experience with cocaine, I think that where it has been injected, and for some reason no extraction has taken place, and therefore no bleeding, uneasiness may be caused. I find a minute and a half to two minutes ample time to wait, and, used with care and common sense, it has ever proved to me a valuable help.

HENRY I. MOORE, D.D.S., L.D.S.E.

24 RUE SERVIEZ, PAU, S. FRANCE.

Domestic Correspondence.

TO THE EDITOR:

First District Dental Society, State of New York.—The Twenty-first Anniversary of this Society took place in New York City during the third week in January. Clinics were given in the rooms of the New York College of Dentistry on Tuesday, Wednesday, and Thursday, and a large number of dentists performed operations on each day of the session, which were witnessed by crowds of interested spectators. Meetings of the Society were also held in the spacious hall of the Masonic Temple, where a number of interesting papers were read and ably discussed, and where various specimens were exhibited to aid in demonstrating theories advanced by some of the speakers.

According to reports in the New York daily papers, several hundred dentists were in attendance. Among the guests present were Dr. J. S. Campbell, of London, Eng.; Dr. J. H. McKellops, of St. Louis; Drs. J. L. Gish and C. M. Chase, of Michigan; Drs. M. W. Foster, T. S. Waters, and W. Finney, of Baltimore; Dr. Geo. H. Wells, of Augusta, Ga.; Drs. E. S. Talbot, J. N. Crouse, A. W. Harlan, and W. B. Ames, of Chicago; Drs. L. D. Shepard, H. K. Stoddard, J. E. Waitt, and F. M. Dowsley, of Boston; Drs. W. C. Barrett and F. E. Howard, of Buffalo; Drs. Jas. Truman, C. N. Peirce, and L. A. Faught, of Philadelphia; Drs. S. B. Palmer and G. L. Curtis, of Syracuse; Drs. E. C. Baxter, of Albany; F. B. Darby, of Elmira; Fred. H. Lee, of Auburn, N. Y.; Dr. E. V. McLeod, of New Bedford, Mass.; Drs. C. S. Stockton, J. E. Palmer, G. E. Adams, F. A. Levy, A. R. Eaton, Oscar Adelberg, B. F. Lucky, C. A. Meeker, C. S. G. Watkins, F. C. Barlow, C. F. Holbrook, and W. Pinney, all of New Jersey; Drs. E. S. Gaylord and Jos. H. Smith, of New Haven, Conn.; Drs. O. E. Hill and N. Jarvie, of Brooklyn, and Dr. Carl Heitzmann, of New York. Many other visiting dentists were present whose names could not be secured for this report.

A dinner was given by the Society to the invited guests on Thursday evening at Clark's famous Café, in Twenty-third Street, near Fifth Avenue. Unfortunately many of the visitors had left the city for their homes, as is apt to be the case where the banquet is deferred until the last evening of a session; however, over one

hundred gentlemen occupied chairs at the tables. The dinner was becoming the occasion and was well served. Everybody present looked happy and all were apparently engaged in cheerful conversation, yet doing good service in disposing of the tempting viands placed before them.

The Brooklyn and Jersey delegations were particularly jovial, as is the usual way with them on such occasions. Hill was in his best mood; Stockton was aglow with wit and humor; Meeker became decidedly hilarious; Levy was all radiant with smiles; Pinney was almost boisterous, and even Adams, who is usually so meek and gentle, looked as though he felt somewhat the influence of the "spirit" of the hour.

Chicago was not much behind them in enthusiasm. There was Crouse, the inevitable, who cannot be crushed,—the indefatigable worker and champion of his profession, who is bound to have his fellow-dentists protected from unjust extortions of wolves and sharks in human attire. Harlan occupied a position just opposite, drinking it all in and rolling up ideas which may appear in a future number of the *Review*. Beyond him sat Talbot, who has the reputation of being exceedingly regular in all his habits and individual ways, but who is ever on the alert to pry into and study up "irregularities" in others. Foster, of Baltimore, secured a seat at the president's elbow, *presumably* in order to be fully served, and evidently succeeded. McKellops, of St. Louis, known everywhere as "Mac," was "around," and held his own in his accustomed genial way.

In due time, the order of "menu" being completed, President Northrop sounded the signal for order, and, after a brief address, introduced Dr. Wm. Jarvie, of Brooklyn, to respond to the toast, "The Dental Profession." Dr. Jarvie spoke of the present advanced condition of dentistry; also of the successful professional career of prominent dentists in this country and Europe, and of the high social position they had attained. In referring to examinations of students, or applicants for diplomas, he stated that, in his opinion, "true merit and ability," if satisfactorily demonstrated, should have greater weight in the deliberations of the examining board than the length of time spent in a dental college.

Dr. A. W. Harlan, of Chicago, was called upon to respond to the sentiment offered for "Our Guests." The doctor believed that the guests had greatly enjoyed the hospitality of their New York friends, and had been much interested in the meetings of the society.

To the next toast, "The First District Dental Society," Dr. N. W. Kingsley was called upon to speak. In the order of travesty, Dr. Kingsley gave an amusing account of the life and workings of the society from the time of its organization, or "birth," to the present period of its maturing loveliness. The audience was kept in a state of continuous laughter throughout the narrative.

To the fourth toast, "The Jersey Boys," Dr. C. S. Stockton, of Newark, was requested to respond. The doctor spoke well for the "boys," and thinks them equal to any occasion like the present one. They, too, know how to get up excellent meetings and how to entertain their visiting friends. He hopes to welcome them all in Jersey in 1892, if the World's Fair Committee decide to have the fair held on Jersey territory. The doctor complimented the New York society on the success of its recent meetings, and the splendid entertainment which supplemented it.

When the last toast, "The Dental Protective Association of the United States," was announced, Dr. J. H. Crouse, of Chicago, was loaded for a response which he fired off with telling effect. He referred to the immense amount of work done by the officers of the Protective Association without fee or reward, and asked of each dentist only the small sum of ten dollars to make up a fund sufficient to protect them in the practice of their specialty and to defend them from unjust exactions.

Mr. J. Kimberly Beach, of New Haven, Conn., was called upon for a speech. He is a member of the legal profession, and envies the dentists for the high position they have gained. He complimented them for the many achievements they had won, and believes that in the great future before them dentistry will be generally recognized as a most useful, benign, and respected specialty of medicine. He thinks that dentists should be protected from unjust claims of pretenders, and in order to be protected should support the association.

Dr. W. H. Dwinelle made a few remarks complimentary to the efforts of Dr. Crouse; after which Dr. C. E. Francis called the attention of the gentlemen present to the arduous labors of Dr. Crouse, and to the valuable time gratuitously given by him for the benefit of dentists generally. Dr. Francis also offered a resolution of thanks to Dr. Crouse for his efforts in behalf of his specialty, which by vote was unanimously carried.

After a song by Dr. B. C. Nash, in which the entire assembly heartily joined, the happy party adjourned.

* * *

Current News.

CHICAGO AND VICINITY.

PROFESSOR TRUMAN W. BROPHY has returned from the Pacific Slope very much improved in health.

THE annual meeting of the Chicago Dental Society was held on February 4. The entire day was devoted to scientific work,—the forenoon to clinics, the afternoon to the reading of papers and discussions; and the evening to a banquet at the Leland Hotel. Between fifty and sixty were present, including the guests of the society. A *marked* and *unmarked* feature of the banquet was the absence of all forms of intoxicating liquors.

LA GRIPPE has seemed to have a special spite against the teachers in our medical and dental schools, and many of them have been obliged to find substitutes to fill their places for longer or shorter periods. Five of the professors in one of the dental colleges were laid off at the same time.

THE annual dinner of the Chicago Dental Club occurred on the evening of February 24, at the Tremont House, at which Dr. W. X. Sudduth, of the INTERNATIONAL DENTAL JOURNAL, Dr. F. H. Berry, of Milwaukee, Dr. C. R. E. Koch, of the Illinois State Board of Dental Examiners, and Dr. P. J. Kester, president of the Chicago Dental Society, were the honored guests.

After the dinner Dr. Sudduth delivered a lecture on "Cellular Morphology," illustrated by numerous photo-micrographs. He was assisted by Dr. L. D. McIntosh, of Chicago, who furnished for the occasion one of his new and improved lanterns.

Dr. Berry, of Milwaukee, demonstrated the "Construction of Appliances for Cleft Palate by a New and Improved Method." Forty-five were present at the dinner.

The Chicago Dental Society and the Chicago Dental Club inaugurated this year a new departure in the line of banquets. Instead of ordering an expensive dinner, at a late hour of the night, the societies sit down to the regular six o'clock dinner, served in a private room. This gives plenty of time for speech-making or literary and scientific work without robbing the next day, and saves a large item in expense, which can be spent to better advantage in other directions.

THE World's Fair? Why, of course. Where should it go but to Chicago? What other city could make a success of it in such a limited space of time? This is what we hear on the street everywhere. Come and see, in 1892, if Chicago does not fulfil her promise.

At a mass meeting of over one hundred dentists, gathered from various parts of the United States, held in the city of New York, January 16, 1890, of which Dr. O. E. Hill was chairman, it was, on motion, unanimously

Resolved, That we thoroughly endorse the Dental Protective Association of the United States, and urge upon every member of the dental profession to join the association, and send to Dr. J. N. Crouse, of Chicago, its president, the initiation fee of ten dollars.

NEW YORK, January 16, 1890.

CALL FOR AN INTERNATIONAL DENTAL CONGRESS IN 1892.—At the Nineteenth Semi-annual Meeting of the New Jersey State Dental Society, held at the office of Dr. S. C. G. Watkins, Montclair, N. J., Saturday, January 11, 1890, the following resolution was passed:

"Deeming it fitting, and the proper time for holding an International Dental Congress in the year 1892, the New Jersey State Dental Society has appointed a committee to act in co-operation with like committees from all other dental societies throughout the United States. They would request your society to appoint a committee to meet with them at the Hoffman House, New York, on Tuesday afternoon, April 8, to formulate plans for the holding of the First International Dental Congress."

Trusting that this will meet with the approval of all Dental Societies and that your executive committees will appoint delegates at once.

Yours very respectfully,

S. C. G. WATKINS, *President*.

GEO. EMERY ADAMS, *Vice-President*.

CHARLES A. MEEKER, *Secretary*.

GEO. C. BROWN, *Treasurer*.

FRED A. LEVY,

A. R. EATON,

G. CARLETON BROWN,

JAMES G. PALMER,

C. S. STOCKTON,

OSCAR ADELBERG,

B. F. LUCKEY,

C. F. W. HOLBROOK,

E. M. BEESLEY,

HENRY A. HULL,

WORTHINGTON PINNEY.

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Original Communications.¹

THE RELATIONS OF THE TOOTH-PULP TO THE OTHER TOOTH TISSUES.²

BY GEORGE H. M'CAUSEY, JANESVILLE, WIS.

OUR imagination is never at rest. During the hours of sleeping it may run riot. During the hours of waking it may be controlled or modified by judgment.

The judgment, controlling the imagination, may have been perfected through a knowledge of facts, and the extent of that knowledge will determine to how great an extent the imagination may be controlled by judgment.

If we neglect the means of acquiring knowledge, we neglect the very means of perfecting our judgment, and we may find that which we consider reason to be merely a grade of imagination.

The human animal acquires knowledge through the medium of the five organs of sense, either of which is created for its own special function. Certain varieties of wine, for instance, can hardly be distinguished apart when presented to the sight, but experts readily determine a variety by placing it in contact with the taste-buds of the tongue.

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in this country.

² Read before the New York Odontological Society, January 21, 1890.

The subtle perfume floating in the atmosphere can be smelled, but who ever felt or saw it? Yet the use of more than one sense may be necessary, at times, to determine certain truths. The interpretation placed upon the impressions conveyed to the brain, through either one or all of the human senses, may and does often differ, yet that does not excuse a refusal to employ the senses in the effort to arrive at or approximate truth.

The unassisted organs of sense are, however, limited in the extent to which they may serve us, and the inventive genius of mankind is being continually exerted in an effort to aid them in the performance of their function. As the Creator has created in the human organism certain organs with special functions, so the necessities of the human family have led to the invention of mechanism for special uses. The necessities of the astronomer led to the invention of the telescope, without the aid of which his occupation would be gone; and instead of a knowledge of facts, so far as facts can be determined through its use, he would be engaged in speculations, which amount simply to Scotch verdicts, or, in other words, not proven. If astronomical facts are arrived at through the use of the telescope, a theory formulated by an astronomer who will use it may approximate the truth. But what shall we say of a theory founded on nothing, which, through the aid of the telescope, has been demonstrated as a fact? If he will use it, he may learn much; if not, can he learn anything definite? If the principle is true, in case of the astronomer, it is no less so in case of the histologist.

There is a limit to the function of the eye, and beyond which the sight cannot penetrate, unless aided by the microscope, which to the eye of the histologist is an annex through which he arrives at truths, which can be arrived at by no other means at present known; and it is therefore safe to assume that any histological theory may be questioned, if not based upon facts ascertained to be such through its use; and any histological theory which cannot at present be demonstrated through its use may be considered as not proven, and as yet an open question.

In a consideration of the relations of the tooth-pulp to the other tooth tissues, the writer assumes that the microscope is the only medium through which we can arrive at facts regarding that important organ, and while awaiting the result of the future effort of the makers of microscope objectives, we can only pursue our studies by aid of the best productions of the present time, and which, like the unaided eye, have a limit to their performance.

A knowledge of the relations of the tooth-pulp to the other tooth tissues involves a study of the developing tooth, and is a question of histology and function.

Sections of teeth and jaw of the lower animals, at about the time of birth, enable us to study the relations of the tooth-pulp to the other tooth tissues sufficiently near, to determine regarding the commencement of the relation, and which can afterwards be pursued by sections yet older, and up to the time of full development. It is a recognized fact that all tissues to be examined under the microscope should be subjected as little as possible to the action of any agent which has a tendency to shrivel the elements, and, in the treatment of embryonal tissues particularly, it should be avoided. Therefore such sections should never be mounted in balsam, which involves the use of alcohol for dehydration. The method described by Dr. Andrews, of Cambridge, Mass., has been found by the writer best to preserve the structure in its original form as a permanent mount. Sections are examined best while resting in a medium which possesses as nearly as possible the same refractive power as do the fluids of the body, and the writer has found iodized amniotic liquor to answer the purpose admirably. The sections may be examined under objectives ranging from a one-eighth upward. They should be of high angle, and, if possible, either oil or homogeneous immersion.

Objections have been raised against the use of the term "tooth-pulp," but, in the opinion of the writer, it is better to use a term which, while it falls short of conveying a full idea of structure and function, is not positively misleading as to facts; and until some better term can, in accordance with a knowledge of facts, be devised, it is, in my opinion, better to retain and for the time make use of the term tooth-pulp. At the instant of the commencement of proliferation of the bud of embryonal subepithelial tissue (and which becomes the future organ of dentinal formation) there begins a series of changes which are to determine the relations of the tooth-pulp to the other tooth tissues.

The growth of the bud continues in an upward direction against the epithelial elements of the enamel organ, until, through the resistant pressure of the enamel organ, it becomes nearly enclosed by the enamel organ. At this particular epoch we can commence advantageously a study of that tissue which constitutes the dental pulp. If we focus upon the tissue (prepared as before recommended) an objective of first class definition and sufficient power of amplification we shall find the central portion to be composed of

the simplest kind of tissue, that known as mucous, or myxomatous. Certain of the cells will be found to contain homogeneous protoplasm only. Others show finely granular bodies within the protoplasm, while others, in addition to the granules, exhibit nuclei. Other cells can be found of the form which we know as bipolar, and are those from which arise the connective-tissue fibres which are found embedded in the pulp at its maturity.

At its periphery we find yet other forms of protoplasmic bodies, and which stand like columns, perpendicular to its surface. One form at its outward extremity is found to be square, or nearly so. Others are of a pear-shaped form, the smaller extremity pointing outward. Both forms will at their outward extremities be found to show processes which, apparently, are a continuation of the protoplasmic contents of the cells of which they are processes. At this time there will be found surrounding the tissue, which we have examined, a layer of formed dentine, and into which we readily trace the processes of the peripheral cells of the pulp.

The fact that the peripheral cells form the only portion of tissue in immediate contact with the forming dentine, justly leads to the conclusion that these cells are the only medium through which the cartilaginous matrix of the dentine is formed and its subsequent calcification is effected.

Observation of sections yet older in development shows that increase in thickness of the dentine is accompanied by a corresponding decrease in the diameter of the pulp.

If we next examine our first section of embryonal pulp tissue under a higher power we will find the cell walls to be penetrated by most delicate filaments, which are connected with the granules of the protoplasm of the cells, the granules themselves being connected with each other by the same delicate filaments. These filaments which penetrate the cell wall are continued through the walls of the adjoining cells, thus forming a delicate net-work throughout the tissue of the entire pulp, including its columnar and pear-shaped cells. Blood-vessels will be found penetrating the tissue of the pulp, the significance of which, as in all tissues, is that of nutrition.

The blood furnished through the developed and developing vessels nourishes the tissues of the pulp, at the same time furnishing the pabulum from which is elaborated the materials for the structure of the forming dentine, through the medium of the peripheral cells.

As all mature tissue has arisen primarily from the mucoid tissue

of the embryo, so does the dentine arise through the formative action of the pulp which, having performed its function, yet continues as an organ of repair, when necessity calls for such action. Unlike most tissues, the thoroughly developed pulp consists largely of its embryonal elements, the only change being in the elements contained within it. Thus far no allusion has been made to the nerves of the pulp, but which we will now consider as we see them through the microscope objective.

We will try and ascertain if we have the right to call a part the whole or the whole a part. An old theory—which is so very old that to most of us it has become new—is that the pulp of a tooth is a nerve. It is an idea which, in the dim past, was communicated by the physician to the patient, and from parent to child among the laity, and it is through the admirable performance of the modern objective that we are to prove the theory a truth or a fallacy.

Later on, we have been told that the function of the pulp is that of a ganglion or nerve-centre. If the tooth-pulp is a nerve we shall expect to find it to be composed wholly of the elements which enter into the structure of nerve tissue. If it be a nerve, it must be morphologically of one or another of the forms of neural tissue. If its function is that of conduction of nervous influence, we will find it composed entirely of nerve fibres. But we have already found it to be composed of mucoid tissue. Microscopical examination reveals the fact that it, like other tissues, contains within its substance neural tissue of that form known as tubular neurine, which enters into the structure of nerves whose function is the conduction of nervous influence.

If the pulp is a ganglion, we may expect to find it consisting of neural tissue in the form of cells.

But as mucoid tissue cannot consist of other elements than mucoid elements, and at the same time retain its identity as mucoid tissue, we will not expect to find it consisting of vesicular neurine, as elements entering into the structure of ganglia. Being formed by the union of nerves, ganglia may be expected to be found connected with axis cylinders, as poles of their cells. We find nothing of the kind, however, unless, by a long stretch of the imagination, we assume that the processes of the peripheral cells are nerve terminals. That assumption is very hard to prove, as their behavior, under the action of reagents and stains, is very different from that which we know to be nerve tissue, when submitted to the same treatment.

Instead of the tooth-pulp showing any of the characteristics of a ganglion, or other nerve tissue, we find that, like other tissues, it contains neural tissue within itself, and of that form which the histologist recognizes as medullated.

The fibres traverse the structure of the pulp mostly in a direction parallel with its long axis, but, at times, approach its periphery, where they terminate as exceedingly small non-medullated fibrils, which may rest near to or between the formative cells of the dentine. That, during the excavation of a cavity of decay in dentine, contact of the instrument with the processes of the formative cells produces a sense of pain in greater or less degree, every dentist well knows; but that it is caused by direct contact of the instrument with nerve tissue, the writer is not at the present time prepared to admit. He has been quoted as denying that the dentinal tubules contain nerve tissue. That assertion is a mistake, but he takes the present opportunity to say that he does not believe that they contain nerve tissue, but is open to conviction.

At the present time it is with him an open question, and the only theory which he has to advance to account for the existence of pain in excavation is through the contractility of the protoplasmic processes of the peripheral cells of the pulp, and the impression of which may be received by the nerve terminals through the medium of the protoplasmic net-work, which extends through and connects the cellular elements of the entire pulp; and it is with him simply a theory which he has as yet been unable to demonstrate to his entire satisfaction as the truth. If we admit that the tooth-pulp is either histologically or functionally a ganglion, we must, in order to be consistent, admit that each and every papilla of the corium which contains nerve terminals is a ganglion, the fact that one is surrounded by a wall of calcified tissue, and the other not so surrounded, having no particular significance. If we admit that the tooth-pulp is a ganglion, we seek in vain for the organ which forms the cartilaginous matrix of the dentine, and afterwards plays an important part in its calcification, and we are compelled to admit, at the same time, that the science of histology is a rope of sand and the results of the continued studies and patient plodding of Virchow, Bilothe, Stricker, Schultze, Heitzman, Black, *et al.*, have gone for naught. The patient investigations of Legros and Magitot have no practical significance, so far as their conclusions are concerned. We are forced to the conclusion that antiseptic treatment of a tooth containing a dead "ganglion" is a myth, and the almost marvellous performance of objectives made by Spencer,

Bausch and Lomb, Tolles, Zeiss, *et al.*, representing the result of the highest grade of patience and skill, absolutely wasted. The years of toiling by skilful manipulators of such wonderful lenses have been worse than thrown away. But the honest seeker after truth may take renewed courage in the thought that, the theory that the tooth-pulp is a ganglion, from either a histological or functional stand-point, would never have been formulated by even a mediocre manipulator of the microscope.

SOME METHODS OF MAKING AND RETAINING REMOVABLE APPLIANCES FOR CORRECTING IRREGULARITIES OF THE TEETH.¹

BY V. H. JACKSON, D.D.S., NEW YORK.

GENTLEMEN OF THE UNION MEETING,—May I have your attention to consider some methods of making and retaining appliances for moving teeth and how to make additions to apparatus already in use, which have been used satisfactorily in my practice.

As bands of gold and gold and platinum are being used generally for attaching and retaining appliances to the teeth, and also for retaining teeth in position after regulating, a few remarks may be appropriate first, as to the best method of making and retaining them.

The metal should be as thin as can be used, and still have sufficient rigidity so that when driven it will conform readily to the tooth.

Gold meets the requirements better than gold and platinum in most cases, as the latter is not sufficiently yielding, and is more liable to discolor when used in contact with piano wire. Better results are obtained by forming the band on the natural tooth than on a model, and much depends on its adaptation.

If there is to be much strain on the band it should be rather broad, and burnished to the tooth with the ends lapping on the lingual side in most cases, at an angle best suited to make a good adaptation. For the incisors or cuspids, a broad piece of gold may have a V-shaped piece cut out of either end, and then burnished to

¹ Read before the Union meeting held at Springfield, Mass., October 24, 1889.

the tooth with the ends drawn together on the lingual surface and soldered, thus adapting it perfectly to the tooth.

A very strong band can be made by fitting two narrow bands to the tooth, having them close together on the lingual and separated on the labial side, and make an impression with mouldine of the front of the tooth and bands, then remove the bands and place them in the impression and solder the parts to be united.

The bands can be used in this way, or a thin piece of gold can be burnished to the labial side of the band and soldered.

To assist in retaining, the inside of the band should be roughened by raising ridges with a sharp instrument, and the tooth polished with a fine grade of pumice-stone so the cement will adhere more readily to it. The cement is used rather thin, and kept dry by rubber dam or spunk.

Where there is a great downward pressure on the band, as when superior incisors and cuspids are being forced forward, it can be sustained in many cases by passing a small platinum wire around the neck of the tooth one or more times, then passing the ends either way below the band, and then twisting together before the cement hardens. If well adjusted this will in most cases resist the most severe strain on the band.

There is also a method of putting a screw through the band and adjusting with zinc phosphate, at the same time tightening the screw.

If there is to be a projection from the band on the distal or mesial surface, for the purpose of retaining a tooth once rotated, or to hold an appliance from slipping from the lingual surface of the incisors, it can be most easily made by bending the ends at a right angle with the bands and then soldering.

The projecting end can be ground or filed to any desired shape, or a lug, or tube, may be soldered to the band for similar purposes.

Bands can be removed usually without cutting, by forcing a thin straight burnisher between the band and tooth.

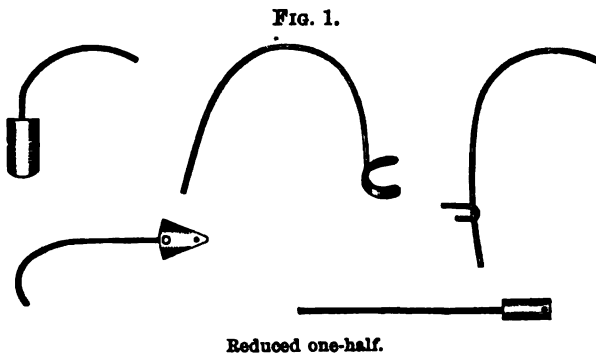
It frequently occurs, when regulating with rubber plates, that an extra spring is needed to complete the regulating. The writer has often attached a piece of piano wire for that purpose, by passing it through a hole in the plate a quarter or half an inch, with the end flattened and formed to fit the surface, and fastened by drawing a binding wire through holes in the plate either side of the flattened wire, and twisting the ends together.

Doubtless a number of the gentlemen present heard a paper read before the American Dental Association in August last, in

which I described a method of uniting piano wire to form independent appliances for the purpose of moving teeth.

Two or more pieces of piano wire are joined in any desired position, and held temporarily with cord, then bound with fine binding wire of copper or iron, wound close together usually, and soldered with soft solder or tin, by holding the parts over a spirit lamp and applying small pieces of solder, the surface having been covered with muriate of zinc; the zinc solution should be very much diluted.

The method of attaching springs to a rubber plate is accomplished in a similar manner by soldering a piece of metal to the end of a piano wire, to be used as a spring for moving teeth, and for retaining the plate in position in the mouth, etc. (See Fig. 1.)



The spring or piano wire is flattened on the end, without drawing the temper, and a thin piece of coin silver, German silver or tinned copper, about one-fourth by half an inch in size, is made in form something like the bowl of a spoon. The flattened end of the wire is then fastened into the depression of the metal by drawing binding wire through holes made with the plate punch, either side of the piano wire, and twisted as close as practicable, with the ends left long, and coiled up in the depression to assist the solder in flowing.

It is then heated over a spirit lamp and soldered by applying pieces of solder or tin, as before described, until the bowl part is filled, when the surface of the solder may be filed, or flattened by turning it down on an anvil and cover with a thick piece of lead and hammered until it is level; the latter will be found the quicker method.

The edge of the silver is trimmed to the desired form, and holes punched with the plate punch in the corners for the rivets.

Gold can be used in place of other metals, if soft solder is used, but, owing to the great affinity of tin and gold, tin is not practicable.

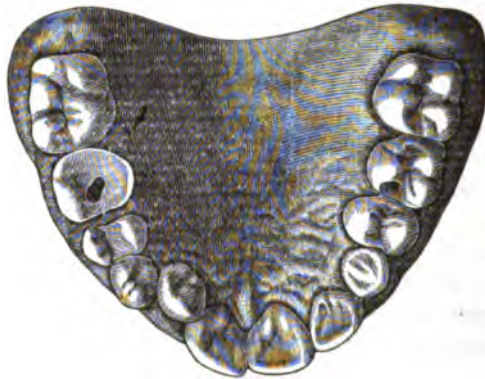
A piece of watch- or clock-spring can be used to advantage in some cases in place of piano wire.

The common brass pin with the temper drawn is a convenient rivet to fasten springs to rubber plates.

The whole appliance can be immersed in molten tin, if it is desired, soldering and plating it at once, or the wire can be tinned before soldering.

In this manner bands or clasps of silver or most any metal can be attached to the end of spring wire to hold it in place on any tooth it is desired to move.

FIG. 2.

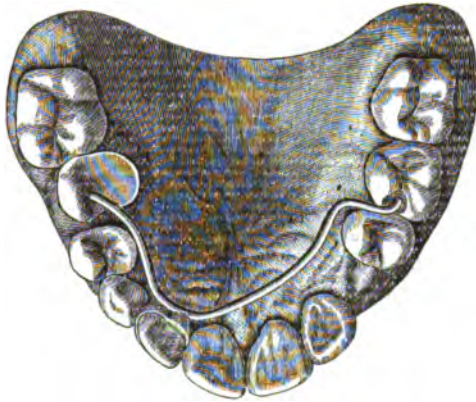


A method of keeping the end of the spring wire from pressing on the gum, or slipping off of the teeth when regulating molars or bicusps, is accomplished by twisting a copper wire around the piano wire one or more times, and soldering with soft solder. Apply by allowing one end to project into the space between the teeth, and the other end to rest on the grinding surface.

For the same purpose a bow of copper wire may extend up over any prominence on the surface of a tooth with the ends united to the piano wire opposite the space between the teeth, as before, or a very thin piece of tinned copper may be burnished to the model of the tooth and soldered to the spring wire in the manner described for soldering metal to piano wire.

The practicability of spring wire being used independently of plates or fixed appliances I have demonstrated in many cases, as from my experience I have found but few irregularities of the teeth that cannot be corrected by the use of the band and spring, which, as a rule, is more easily made and adjusted than other appliances.

FIG. 3.



A simple method adopted to force a superior incisor into proper position that stood inside the normal line of the arch was to cement a band to the tooth, with a U-shaped piece of metal attached to the lingual side. A piano wire of about No. 20 gauge was formed to follow the curve of the arch back of the incisors with the ends in form of a letter S and allowed to project into anterior proximal cavities of the temporary molars. (See Figs. 2 and 3.)

The pressure was increased by removing the wire and straightening the ends. The regulation of the tooth was accomplished in thirty-four days, with perfect comfort to the patient, a very desirable feature, especially in the case of children.

DESCRIPTION OF A SPECIMEN OF CLEFT PALATE.¹

BY JOHNSON SYMINGTON, M.D., F.R.S.E.,

Lecturer on Anatomy, Minto House, Edinburgh; Examiner in Anatomy in University of Edinburgh.

THIS specimen was met with in a male subject, aged seventy, dissected in my rooms last summer session. The cleft was obviously congenital, and extended through both the hard and the soft palates and the right alveolar arch. It opened above into the right nasal cavity.

The upper jaw was practically edentulous, so that it was not possible to determine the relation of the cleft to the incisor teeth. It may be noticed, however, that the cleft passed through the alveolar arch barely a quarter of an inch external to the frænum of the upper lip, so that on the right side there was obviously not room internal to the cleft for more than the central incisor tooth.

Mr. Bowman Macleod kindly made a cast of the deformity for me, and I then froze the specimen, and made a series of transverse vertical sections through the palate, nasal cavities, and maxillary sinuses. Sections of this kind are very useful for the demonstration of the relation of the palate and nasal cavities, and Zuckerkandl² has employed this method very extensively for the illustration of diseased conditions of the nasal cavities. I have, however, been unable to find any published drawings of similar sections in cases of cleft palate. Indeed, the illustrations of this condition appear to be practically confined to representatives of the cleft as seen from the mouth. These figures, which are generally diagrammatic, merely represent what can be readily seen on an examination of the deformity in the living body, and give a very incomplete view of the condition of the palate and nasal cavities.

Fig. 1 is a drawing of the cleft in my specimen, as seen from the oral aspect. There is a cicatrix in the upper lip below the right nostril, and it looks as though there had been a hare-lip on that side

¹ Read before the Odonto-Chirurgical Society of Scotland, December 12, 1889.

² Normale und Pathologische Anatomie der Nasenhöhle. Wien. 1882.

which had been operated on. The anterior part of the alveolar arch to the left of the cleft projects lower down and overlaps somewhat the thickened and warty-like mucous membrane attached to

FIG. 1.



the alveolar arch on the right side of the cleft. The left alveolar arch gradually becomes less prominent as it passes backward. The fissure extends through both hard and soft palates, and there are two distinct uvulae.

Four transverse vertical cuts were made with a saw, so as to divide the specimen into five pieces. The two anterior cuts went through the nasal cavities, and the two posterior ones through the naso-pharynx. The transverse lines on Fig. 1, numbered 1, 2, 3, and 4, indicate the position in which the sections were made.

Fig. 2 is from a tracing of the posterior cut surface of the anterior slab. The ethmoidal sinuses and superior and middle turbinated processes are fairly symmetrical, except that the right middle turbinated process is distinctly smaller than that of the left. The septum nasi passes downward, and slightly to the right, for one and one-fourth inches. At this point it is thickened, and then makes a very marked bend downward and to the left, to join the left palatine process.

It will be seen that the fissure, although opening into the right nostril, is situated to the left of the mesial plane, and the closure of

the left nasal cavity is not associated with any marked development of the palatine process on that side, but depends upon the deflection of the septum nasi to the left. The vertical thickness of the left

FIG. 2.



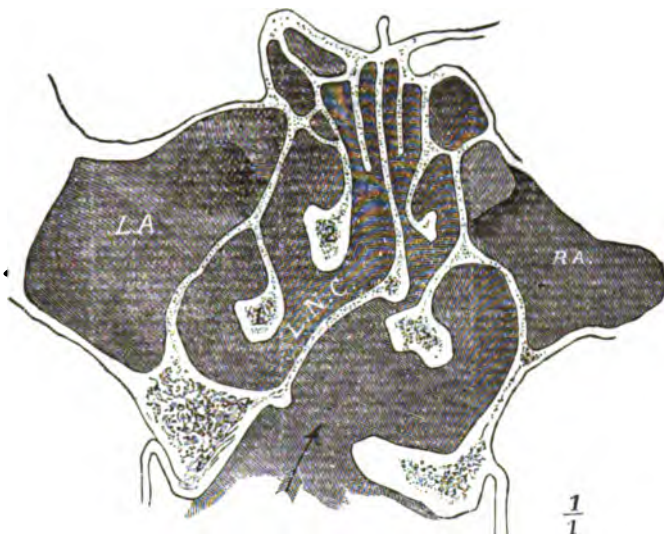
alveolar arch is decidedly greater than that of the right, but it lies farther from the mesial plane. The antrum is larger on the left, LA, than on the right, RA, side. The openings from the antra into the infundibula are anterior to the section, and there are no apertures leading directly from the antra into the middle meatuses.

Fig. 3 shows the posterior surface of the second slab. It will be observed that in this plane the septum has a very prominent ridge projecting from its right side into the space between the superior and middle turbinated processes. Below this ridge the septum inclines downward and slightly to the left. The antrum extends much lower down on the left side than on the right.

Fig. 4 is taken from the posterior surface of the fourth slab. The body of the sphenoid is divided nearly half an inch behind the posterior clinoid processes. The left sphenoidal sinus is opened, but the right one does not extend so far back. The section is a little behind the pterygoid processes, and corresponds to the pharyngeal ends of the Eustachian tubes. Each Eustachian tube is bounded internally and above by its cartilage, the outer wall being membranous. The two halves of the soft palate are of about the same

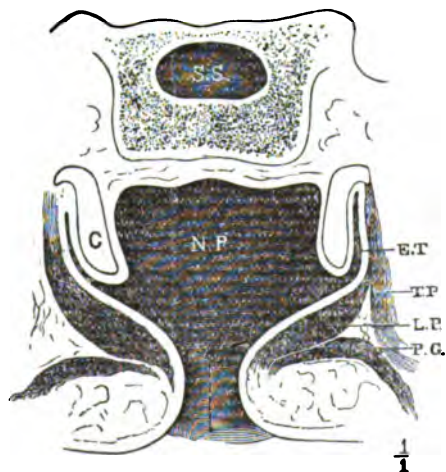
thickness. Below the Eustachian orifices they are about three-quarters of an inch thick, but become rather thinner as they

FIG. 3.



approach the mesial plane. This section shows extremely well the relations of the palatal muscles. The levator palati forms a well-

FIG. 4.



defined mass of muscular tissues, which lies just beneath the mucous membrane, covering the upper surface of the soft palate. The

tensor palati appears as a thin sheet of fibres lying external to the Eustachian tube. On the right side, after removing a little fat, its tendon was easily traced to the hamular process of the internal pterygoid plate. A small bundle of fibres connected internally with the lower part of the levator palati, and passing outward and downward, belongs to the palato-glossus. The section is immediately in front of the tonsils, and consequently anterior to the palatopharyngeus.

The muscles of the soft palate are separated from the mucous membrane on the oral surface of the palate, by a thick layer of glandular tissue and fat. It is scarcely necessary to point out how clearly this specimen demonstrates the relations of the muscles of the soft palate, as described by Sir William Ferguson. It also shows that the levator palati lies much nearer the upper than the lower surface of the soft palate, and, therefore, can be most readily divided by Ferguson's method.

TOMATO-POISONING.¹

BY WILLIAM A. MILLS, D.D.S., BALTIMORE, MD.

GENTLEMEN,—I desire in this paper to call the attention of the profession to a new disease, which, after many years of experience, I have discovered to be and have named tomato-poisoning.

Of necessity I shall be brief in details, leaving the history of its discovery for some future paper; nor will I attempt any explanation of its pathology, but will leave it to others to philosophize upon its phenomena.

Symptoms.—At first the pain is rather indistinct, only manifesting itself in an uneasy uncomfortable feeling, being more pronounced as evening approaches, and most acute at night. These symptoms may continue for days or weeks before the patient seeks relief from the agonizing pain which follows. Pain is rarely ever localized, but is made manifest by all kinds of reflex conditions. Patient cannot take anything sweet, even moderately warm or cold, into the mouth without causing the most intense agony. Going from the house into the open air, or from one room to another, where there is but a slight difference of temperature, produces the most acute paroxysm; sometimes seeming to proceed from an exposed or inflamed nerve, centring in one or more teeth in the same maxilla, or both; then apparently jumping from tooth to tooth, and then, by reflex action, causing neuralgia of the neck, head, ear, or angles of the jaws, alternating from point to point with the swiftness of the electric current. The duration and intensity are governed by age and temperament of the patient.

Diagnosis.—Upon the most careful examination of the oral cavity we fail to find any decay in the tooth the patient complains of, nor in any others in which reflex action could be supposed to play any part in the distressing symptoms. No response to concussion, no deposit of any kind, on any part of the teeth. All indications of pyorrhœa alveolaris absent, rarely any devitalized teeth; in general, the gums and associated parts apparently normal; mouth clean and properly attended.

¹ Read before the Maryland State Dental Association, December 5, 1889.

But, on very close examination, we discover around the necks of the superior molars (but rarely the inferior), particularly manifest on the palatine surfaces,—and even recession of the gums, about an eighth of an inch wide, as even and clean cut as though done with the most accurate mathematical precision,—the denuded surfaces are clean and white, in striking contrast with the surfaces above the line of original attachment of the gums.

If we place a steel instrument anywhere along the line of the recession, touch it with the finger-nail, or blow air upon it from the syringe, the patient exclaims in agony. So far all remedies have failed to effect a cure except the absolute prohibition of tomatoes as an article of food. All the foregoing pertains only to patients from eighteen to twenty-five years of age. With older patients the disease proves more serious. In its first stages all the symptoms of the younger are manifest, lasting about two or three weeks, when the tissue surrounding the tooth or teeth affected shrink again to their normal position, but do not become attached to the teeth as in the case of the younger. About the fourth week the gums surrounding the necks of the teeth show a slight thickening of tissue, the color of which resembles the line of lead-poisoning. The slightest pressure of the tongue causes great pain, apparently deep-seated in the maxilla; the sensation imparted to the tongue, when touched by it, is that of something foreign and glassy. About the fifth week the teeth begin to loosen, the alveolar wall is absorbed, and in some cases caries of the roots takes place. About the sixth week the tissues collapse, when we have a condition resembling that of cancrum oris or arsenious-acid poisoning.

At this point the disease has reached its climax. If the tooth does not fall out from lost attachment, it must be extracted to give relief, which will be but slight, as all pain does not cease for days afterwards. Prohibition of tomatoes gives no relief in these cases; all remedies have failed to give even temporary relief, nothing but extraction effecting a cure.

Patients rarely lose more than one tooth the same year. The disease is most prevalent during the wet seasons. This is no doubt due to the greater amount of acid contained in the tomatoes. The disease never attacks a devitalized tooth. One great peculiarity about the disease is that, during the whole process of absorption, there is almost a total absence of fœtor. In diagnosing this disease do not confound its symptoms with that produced by grape and tomato sore mouth; always hunt for the recession of the gums on the palatine surfaces of the superior molars.

Reports of Society Meetings.

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting, Tuesday evening, January 21, 1890, in the New York Academy of Medicine, No. 12 West Thirty-first Street.

The president, Dr. J. Morgan Howe, in the chair.

INCIDENTS OF OFFICE PRACTICE.

Dr. Geo. S. Allan.—Mr. President, I have here an amalgam carrier that I would like to show the gentlemen present. I do not know of any instrument in the market that will meet the good points of this one. A slight pressure opens the nibs to receive the amalgam, and when it is carried to the cavity the nibs are pressed apart and the amalgam placed wherever desirable with the other hand. There is no danger of dropping the amalgam on the way from the desk to the cavity, and the instrument works well in every way. The spring is very light, just enough to hold the amalgam without pinching it, and the beaks are a little serrated inside, so that the amalgam does not drop off when the nibs are separated.

I have long wanted a syringe for general work in the mouth that would be free from many of the objectionable features of those we ordinarily purchase. The rubber syringe never works well after it has been used a short time; the piston soon wears in the barrel and the suction becomes imperfect. This one, which I now exhibit, is a glass syringe, and it holds about the requisite quantity. When it is being filled there is no loss whatever; no air follows the fluid; and it works smoothly as only a syringe with a glass or metal barrel will. I have two or three nozzles here; two for reaching into the antrum. One of these is something on the principle of Dr. Farrar's spray syringe. It throws the fluid in all directions, and there is no difficulty in treating diseases of the antrum with any medicine that it is desirable to use. Then I have a third nozzle for ordinary work in the mouth, for pus pockets, or cavities

where teeth have been extracted and there are indications of blood-poisoning. Take it as a whole, it is one of the handiest little instruments that I have ever had for such purposes.

When syringes are used only occasionally and are then laid away, the plunger soon becomes dry, and has to be soaked before it will work. That difficulty can be obviated by taking off the nozzles and placing the syringe in a glass jar or bottle with a little water in it. They are then ready for use at any moment. The Farrar syringe is a most useful little instrument, but I have heard complaints about its becoming contrary and refusing to work; but if it be put into a bottle after using, as I have suggested, it will always be ready to do its work.

A Voice.—Where can this syringe be purchased.

Dr. Allan.—This I bought of a surgical instrument-maker on Sixth Avenue, just below Thirty-fifth Street, east side, next to Cherry's trunk store. He made these nozzles to order.

With the consent of the president, I would like to read from the *Dental Review*, of January 15, a few paragraphs from an article headed "Ethics, Professional and Otherwise," and signed "Nemo." This article attempts, in a very naïve way, the defence, as I take it, of the Dental Trade Association, and indirectly raps the profession over the knuckles for intermeddling with the business of others. After I have read the paragraphs I will tell you why I read them.

"Much has been said and written in regard to the impropriety of dental patents secured by dentists, and, by sale or otherwise, made a source of revenue to the inventor. It would seem to be not difficult to defend the rights of the individual in this matter. If he has voluntarily become a member of a dental society, he is in honor bound to abide by its rules or to withdraw from its membership; and, on the other hand, members of the society may properly refuse to recognize professionally those they believe to be acting in a manner adverse to the interests of the profession. But when dentists go beyond this, and practically claim the right to establish a code of ethics for those engaged in an entirely different occupation, they invite the like interference with, or at least criticism of, their own acts. There has been much sharp denunciation of dealers in dental goods because of an association formed by them, also of certain manufacturers, because of their purchasing patents, and in various ways so managing their business as to make it most profitable to themselves. While trusts are multiplying and are made for the acknowledged purpose of preventing competition, con-

trolling production, and advancing prices, it is gratifying to know that this Dental Trade Association has no power to prevent competition, limit production, or fix prices; and without such power it is certainly not much to be feared by the public.

"Manufacturers and dealers in goods of all kinds do business for profit in hard cash, and the struggle for success is always sharp and often unsuccessful. Much work in every branch of business is done without profit, and yet this part cannot be rejected, as it is essential to retain the other. The grocer who should refuse to sell sugar because there is no profit in it would soon find his customers going elsewhere for other goods besides sugar."

Now I want to say that there has seldom been put in a few lines a stronger argument in favor of independent journalism than that contained here. It is because dentists acknowledge openly, and assert openly, that this Trade Association is governed by different rules and a different code of ethics from others, that they want to have their journals independent. They do not want their journals dictated to by an association or a business concern that is antagonistic to the principles that they wish to adopt, and that they do adopt in their daily professional life. It is for the interest, as this writer plainly says, of the Trade Association to deal in patents, to purchase patents, and to obtain the control of patents, and this for the sake of making money. Now, the ground taken by the dental profession is that we dentists ought not to patent articles ourselves or allow a product of our brains to be made merchandise of by others. I do not think there is any question about that; therefore this plain, unvarnished statement of a defender of the Trade Association, I think, calls for a slight notice. He says there that the association has not the power to prevent competition, limit production, or fix prices; and that without such power it is not much to be feared by the public. I do not pretend to know what the rules that govern that association are, but I do know this as a fact: that no dental dealer or manufacturer can start in business anywhere in these United States and be successful unless he joins that association. That is a simple fact which men here present know to be such; and that certainly indicates that the profession, as a whole, are right in their position of antagonizing this association, because it does not allow of free trade in the necessities which we daily require in practice.

Dr. S. E. Davenport.—It may not be out of place at this time for me to give favorable testimony concerning Mr. R. S. Williams's crystalloid gold, No. 3, which I have been using several months.

I am surprised, when thinking the matter over, that I have come to value it so highly, for I was not at all pleased with the previous numbers of the same gold, although I gave them, as I thought, a fair trial. The No. 3 can be placed in a cavity without crumbling, is easily pressed into an undercut or other inequality, and it seldom tips up when starting a filling, though the unevenness of the cavity be very slight. This gold never seems harsh; on the contrary, it possesses a lead-like quality fully equal to the combination of tin and gold, is sufficiently cohesive without annealing for all ordinary work, and even when heated to a red heat to anneal for large contours it does not become stiff. While experimenting with this gold I have been led to use it from the foundation, in a number of large fillings, where considerable masses of gold were necessary for contours and new biting surfaces, and the result has been very satisfactory. The surfaces are very hard, about the same, I should say, as crystal gold, and I expect those fillings to be durable, if the cavities have been properly prepared. While the question of time is less important than many others, it yet means much to all busy men, and therefore it is only fair to state that with the No. 3 crystalloid a filling can probably be made more rapidly than with any other cohesive gold.

Following the method which was so ably introduced last year before this Society by Dr. Dwight M. Clapp, of Boston, namely, the combination of amalgam and gold in the same cavity at one sitting, I have found that No. 4 crystalloid gold—which is, I think, prepared especially for work of that character—is in my hands superior to Steurer's gold, which Dr. Clapp was using at that time. It is not so crumbly, the parts being held together by a layer of foil on each side, and it can therefore be carried to place and condensed without breaking to pieces; and that I never could do with Steurer's gold, unless the cavity was in the lower jaw, when gravitation would assist. Dr. Kingsley being present, I hope he will say a few words in explanation of his early efforts to combine gold and amalgam. He succeeded, I know, but although I have tried to find a full description of that success, the effort has been in vain.

Dr. N. W. Kingsley.—It does not seem to require many words. I remembered while the gentleman was speaking on the subject that I, with some timidity, brought it to the attention of the State Society the first time I ever mentioned it publicly. I say with timidity, because I knew the prejudice there was against amalgam. I remember especially one gentleman making comments upon it of this nature: he never used anything but gold, and never had any

difficulty whatever in using it; any man who could not use gold successfully proved his inability to do work properly; and to fall back upon amalgam for a substitute in the way which I described proved great lack of skill. But the mills of the gods grind slowly, as do some other mills; and I knew if it was worth anything it would be accepted in time; and, perhaps, if it was not worth anything. My experience has been that, whether a thing is good or bad, sooner or later many of the profession will be found adopting it and lauding it to the skies; the professional pendulum will sooner or later swing from one extreme to the other. I never had any serious difficulty in combining gold and amalgam; but to say I never had any difficulty would not be stating a fact. I do not know of anything in dentistry that I have not had some difficulty in doing at first. I used amalgam in that way because I was forced to. I felt compelled to use something against the cervical edges of approximal cavities of molars and bicuspidis where they were not easily reached, cavities where the space between the teeth was somewhat narrow. It seemed to me that if amalgam was good under any circumstances, there was no objection to putting it there; particularly as I had seen many of the best operators, when good gold fillings in such places as that had given out, repair them with amalgam; and I did not know why it would not be as well to use amalgam in the beginning. I used a small quantity of amalgam, and packed the gold against it. In some cases the gold would continue to absorb the mercury from the amalgam until the cavity was one-half or two-thirds full, but I would keep on with the work and subsequently the gold would unite.

Fillings made in that way stand. That is my experience, and I think it is also the experience of others. They are not as liable to give out along the border as fillings made entirely of gold. I do not think there is anything especial in my experience or method of doing that kind of work.

Dr. Davenport.—The question in my mind was not as to the advisability of combining amalgam and gold in that class of cavities, for I think the profession has grown sufficiently to recognize the value of such fillings. The point was whether Dr. Kingsley used a special gold and succeeded in getting a chemical union. I have been able to get a definite union of gold and amalgam with but two preparations of gold; those preparations are Steurer's gold and R. S. Williams's crystalloid, No. 4. Of course, if Dr. Kingsley filled only one-third to one-half the cavity

with amalgam and then began with the gold, packing it into undercuts, he would not need a definite union; but, if he recollects Dr. Clapp's paper on that subject, it was stated that most of the filling, including the knuckle, was made of amalgam with only a thin capping of gold which did not extend into undercuts, but depended entirely upon its union with the amalgam.

Dr. George A. Mills.—Dr. Kingsley's idea of combining gold and amalgam was probably first suggested by the necessity for repairing large gold fillings. I remember performing some very extensive operations with No. 60 and No. 120 gold for one patient who was undergoing a good many constitutional changes, and these conditions manifested themselves in the teeth. He came to me in 1880 or 1881 with gold fillings on the buccal surfaces of the teeth and decay had recurred. I thought the best thing I could do was to cut out and fill with amalgam. I did so. After a year I found extensive decay on the approximate surfaces and lingual surfaces. I cut that out and filled in the same way, following right around at different times, until now I have gone entirely around the teeth. I saw the gentleman four or five weeks ago, and he spoke particularly of the manner in which I had saved his teeth. I consider it was due to the combination of metals. I have seen an immense amount of mischief done in filling teeth with amalgam, especially approximate cavities. Extensive fillings are found where, although the cavities were large in the first place, the decay dips in under the edges of the fillings. I have come to the definite conclusion, in treating those cases, that the amalgam was placed in the teeth because the dentist could not do anything better. In many cases I have cut out the fillings and filled with amalgam, restoring the contour with gold. I have come to be a believer in the general characteristics of Dr. Palmer's theory in regard to the combination of metals, and am a strong advocate of the combination of tin and gold. I have had several years experience in it, and have talked with a good many intelligent dentists who believe with me that teeth can be saved by a combination of metals when perhaps they could not be saved in any other way.

Dr. Lord.—Mr. President, we have Dr. Palmer, of Syracuse, here this evening.

The President.—We shall be pleased to hear from Dr. Palmer.

Dr. S. B. Palmer.—Mr. President, I think all has been said on the subject that is necessary. I remember very distinctly being present when Dr. Kingsley made his first announcement in regard to the combination of gold and amalgam. I was meeting with so

much opposition at that time for having advocated the use of tin and gold in contact that I did not dare to include amalgam, and did not for several years after because of the prejudice against it. When Dr. Kingsley was about to make his announcement to the State Society, he came to me and asked what I thought of the practice he was going to introduce. I told him to go on, that the principle was right and he was safe in advocating it.

In regard to the combination of tin and gold, unless the two metals are properly mixed, as I have previously described, so that the tin and gold form an alloy which resists oxidation, I have found that the tin portion of the filling was affected by galvanic action, becoming a soft black mass. Seldom is there any decay, but an instrument can be inserted through the tin portion of the filling. No doubt others, who have used tin and gold in combination, have noticed like conditions. Experience teaches that amalgam is more reliable than tin at the cervical border as a guard material under gold. Some operators seem to have difficulty in anchoring the gold to a freshly-inserted amalgam base. Alloy for this purpose should be kept in the ingot, and be cut for each operation, and not amalgamated till after the cavity has been dried ready for filling. Amalgam thus prepared, unless there is more than the right proportion of mercury, will become firm while packing the first layers of gold, and will not cause the gold to slide upon the surface, because of the presence of free mercury. Occasionally it occurs that gold must be added to or built over amalgam previously inserted. It is very important that all surfaces which come in contact with gold be touched with mercury, so that the gold may be soldered to the amalgam; the two metals, thus united, never show the joint by wear or chemical action, because the mercury, thin as the coating is, becomes an amalgam containing gold of higher potential or finer than the body of the plug. Practically, the gold element passes over the line of union into the body of the amalgam.

Quite the reverse of this occurs when amalgam is added to amalgam, even though the potential may be nearly the same between the plugs. Of course, the joint is made perfect by the newly-inserted material being soldered to the old, but the alloy or solder which joins the two is not as fine as either other element, containing, as it does, more mercury. The result is, chemical action works upon the joint; a slight seam or hair-line is first noticed, and after a few years the pieces separate. A single thickness of gold foil, placed between the two plugs, would secure a perfect joint, the connecting element would be negative or finer than the body of

the filling. Those who have made temporary plates of silver, where the backings of the teeth were fastened to the plate with soft solder, know that the teeth with the rim of solder would separate from the plate in a few months. Certainly was this the case where the tinning of the plate was done with chloride of zinc, because the tinning became an alloy of silver, zinc, tin, and lead, and was decomposed by galvanic action.

The President.—Dr. Merriam has sent for exhibition fourteen samples of files for finishing fillings and filing enamel edges. They are curved on the edge, and are all different. I will pass them around, so that the gentlemen may see what excellent and practical ideas Dr. Merriam has had in devising files for these purposes.

The secretary being absent, I will ask Dr. Davenport to favor us by reading the paper of the evening, by Dr. George H. McCausey, of Janesville, Wis., on "The Relations of the Tooth-Pulp to the other Tooth Tissues." (For paper see page 193.)

The President.—Gentlemen, you have heard Dr. McCausey's interesting paper; the subject is now open for discussion.

Dr. Carl Heitzmann.—Mr. President, you have been kind enough to invite me here to-night, and I feel that I am amply repaid for coming. Last year I listened to a paper by Dr. Ingersoll on this subject. Dr. Ingersoll maintained that the whole pulp is nerve tissue, and that the pulp itself is a ganglion. I have fought that theory as much as I could, and now I am really delighted that a gentleman, whom I do not know personally, takes exactly the same ground that I took last year, and have taken since I began studying the histology of the teeth, more than thirty years ago.

The gentleman exhibits a familiarity with certain minute anatomical features of the pulp which both delights and surprises me. He speaks of the delicate fibrillæ passing through the protoplasm and connecting the granules with one another, going from one cell to another, and making the whole a continuous tissue. I am sure Dr. Allan, who is present to-night, will be delighted to hear that. He denies it. But here is a gentleman, who has never studied in my laboratory, and never drew the reticulum in my laboratory, and, nevertheless, describes it as existing throughout the protoplasm which builds up the pulp tissue. After all, gentlemen, if one does not get his reward quickly, when working hard and earnestly, he does get it sooner or later. This is a reward to me, for the gentleman seems to corroborate my own statements; and, with the exception of some slight discrepancies of no impor-

tance, I can agree with what he has said. Although he does not mention Dr. Ingersoll he evidently refers to his views. He perhaps does not want to personally attack Dr. Ingersoll; but as far as I am concerned, I have no such objections. The essayist says that the basis substance of the dentine is cartilaginous. That is a slight mistake. It is a glue-yielding substance, but not cartilaginous. When boiled, it yields a cloudy liquid smelling like glue, but not viscid. He maintains that the odontoblasts, which he does not exactly nominate as such, though giving an accurate description of them, send offshoots into the dentine, and he claims that these offshoots are not nerves. We all of us know that John Tomes alluded to the possibility that the tenants of the dentinal canaliculi might be nerves. It is perfectly surprising, gentlemen, how near this excellent investigator, who is still living, approached the truth. If the essayist had used, instead of protoplasmic threads, the term that Dr. Boedecker and myself have chosen,—living matter,—he would have pretty nearly stated the facts correctly. The nerves, as such, are undoubtedly forms of living matter, in contradistinction to what Lionel Beale says of the basis substance of connective tissue being “forming material.” How is it possible that an almost inert mass, such as the basis substance of connective tissue is, should be compared, as Beale does, with the most active tissue that we have in our bodies,—the nerve and muscle tissue. This mistake was demonstrated by Bastian, and I have simply upheld his theory. What we call nerve is not formed material, neither is what we call muscle; but both are living matter. If we take this ground and say that living matter pierces the dentine in all possible directions, being merely stored up in the shape of filaments that are able to conduct sensation, and that are able to supply the whole dentine with what we call the properties of life, nutrition and growth included, then we have said pretty nearly everything. Then we have asserted that the living matter, being within the canaliculi of the dentine, is in one essential point identical with the living matter building up the nerves. This is the ground taken by Dr. Boedecker and myself. We have looked a long time for the immediate connections between the dentinal fibres and the non-medullated nerves, and I can say that we have failed to see such direct connections. Some very sensible dentists assume that such a connection must exist. In cutting a tooth we know that as soon as we have reached the boundary zone—the interzonal layer of Dr. Atkinson, between the enamel and the dentine—there is a keen sensation of pain; and another point where there is marked

sensibility is the neck of the tooth. How shall we explain the carrying of what we call sensation from far up at the boundary of the dentine to the tips of the nerves, unless there is something living within the dentine? Therefore we have to admit that a connection exists between the dentinal fibres and the non-medullated nerve fibres; but this connection is not a direct one. In other words, the dentinal fibres do not directly inosculate with the nerve fibres, but there is an indirect connection existing. That means that this very reticulum, which the essayist described, and which unquestionably exists, furnishes the material by means of which the dentinal fibres are connected indirectly with the nerves. If we say that this reticulum, which the gentleman calls the protoplasmic reticulum,—we prefer the term living reticulum,—if we say that from the top of the crown down to the pulp-chamber there is such a continuity of a living reticulum, we have said pretty nearly everything that we understand of the dentine and its marked sensibility. Besides, it explains a fact which Dr. Boedecker first demonstrated,—that the points of greatest sensibility are at the interzonal layer between the dentine and the enamel, and at the neck of the tooth between the dentine and the cement; for at those points there is more living matter and a coarser reticulum than is found throughout the rest of the dentine or of the cementum.

I can say that, with a few exceptions, I concur with the gentleman who wrote this paper. Evidently he has really studied with the microscope, in contradistinction to Dr. Ingersoll, who admits that he did not; and in contradistinction to some other men who claim to know something about the microscope and who do not know even the elementary principles of microscopy. This gentleman truly says it is bad practice to mount sections of teeth in Canada balsam. He is right. We have demonstrated years ago that it is a blunder to mount specimens in Canada balsam. I heartily and cordially agree with the essayist in every essential point.

Dr. Allan.—The old Scotch verdict, not proven, which the author of that paper alludes to, certainly is the verdict not only of the writer of the paper, but is the verdict of the histologists of the present day, so far as any direct relationship can be shown between the contents of the dentinal tubuli and the pulp tissue. But it is not necessary that the contents of the dentinal tubuli should be nerve tissue in order to convey sensation. Protoplasm itself conveys sensation most decidedly. Any one who has studied under the microscope the lower forms of animal life, such as the protistæ

and the monads, will have direct evidence that protoplasm, long before there has been any differentiation that can be demonstrated by any microscope, possesses what we would call sensory power. In other words, it seems to manifest life to a certain extent, in action, motion, and direction in avoiding obstacles, and in many other ways; therefore it is not at all necessary to suppose that these contents of the dentinal tubuli are directly or indirectly nerve tissue, because in some way they do convey sensation, for that sensation is a property of protoplasm is a truism that cannot be questioned.

In regard to the reticulum, it is barely possible that, as Dr. Heitzmann claims, this paper upholds his theory. It is a theory that I have often invited Dr. Heitzmann to put in my hands specimens to prove and in which I do not believe.

Dr. George Evans.—I have been in Dr. Heitzmann's laboratory, and have studied with him. The reticulum that has been discussed here this evening I have seen distinctly, both in the dentine and in the enamel, as represented by Dr. Boedecker and Dr. Heitzmann.

Dr. Allan.—I know of several besides myself who are exceedingly interested in this subject, men of character and of acknowledged technique; histologists, who are very anxious to obtain specimens to prove whether this marvellous reticulum exists or not. If any gentleman here can put me in the way of obtaining such a slide I will be very much obliged to him, and will put it to a good use.

Dr. Atkinson.—In my acquaintance with scientific men I have met with no one who so entirely captivated me in the demonstration of what he really sees in the microscope as Dr. Heitzmann.

The point of interest in this paper is to find out what function is. I think we are nearing it. I was inspired by some pupils that I had to undertake to show that embryonal tissue made its first appearance in a neural mass, so that it included all possibilities of function within it, and the differentiation of that material afterwards gave us the lay-out of the five tissues that we are so well acquainted with. I think that little key will unlock the whole difficulty of the conductivity of protoplasm, and the conductivity of the same thing when it is in shape of a nerve mass called neurine, which is nothing less than protoplasm. I think it merely a matter of difference in verbiage.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

SEVENTH ANNUAL SESSION OF THE MARYLAND
STATE DENTAL ASSOCIATION.

(Continued from page 181.)

THE annual session was held on December 5 and 6, 1889, at the St. James Hotel, Baltimore, the president, E. P. Keech, M.D., D.D.S., in the chair.

Thursday, December 5, 1889.—Evening Session.

DISCUSSION OF DR. WM. A. MILLS'S PAPER ON "TOMATO-POISONING."

Dr. Grindall.—Mr. President, I think our friend, Dr. Mills, is mistaken in ascribing the cause of the trouble to which he refers as being due to the tomato. It will probably be found that it was due to calomel, though the difficulty may have been aggravated by the acid of the tomato. I have known of cases in which patients have been afflicted in the way spoken of by Dr. Mills, but the cause in those cases was properly attributable to calomel.

Dr. E. Nelson.—I desire to ask Dr. Mills whether he has determined, by chemical analysis, the peculiar acid in the tomato which affected the teeth in the manner he has described, and why it is that only the teeth of which he has spoken and not the teeth of other persons were affected?

Dr. Mills.—That is a conundrum to which I can only answer, "I give it up." In the statement I have made I have endeavored simply to state actual facts. I anticipate, at some future day, to give a history of the discovery of this disease. I may add here that the conditions of which I have spoken have, for years, been very marked in cases among young people. I have treated patients for the trouble, but did not know at the time what the exact cause was, and I only discovered it by accident. I have myself lost teeth from this very disease; the specimen I have exhibited here being a tooth from my own mouth. I assume that for that reason I am better able to judge of the cause of the trouble than are others who have not had personal experience with it. I lost two teeth in experiments upon myself, and that is why I claim to speak with some authority. Possibly every member present has had more or less

experience in contending with cases of this kind, without supposing that the cause was to be found in the tomato. I have watched very closely the developments in my own case. While on the floor, I may say that this is only one of many cases of a like character to which my attention has been called. I propose to detail, at some future day, the results of my observations in other directions,—viz., quinine and other poisons.

As I intimated at the outset, I do not propose at this time to pronounce any decision upon the phenomena, but simply to throw out the suggestions that have occurred to me, with a view to the matter being taken up later by some one more capable than myself of reaching a determination upon it.

Dr. T. S. Waters.—I do not rise to discuss this subject, but merely to refer Dr. Mills to our friend, Dr. Rawlings, of Lexington, Ky., who has written considerable on the disease, claiming that the original cause of it is pyorrhœa alveolaris. By corresponding with Dr. Rawlings, I suggest that Dr. Mills may acquire more scientific data than he has now to enable him to reach the bottom of the trouble in what he has spoken of as the tomato disease.

Dr. D. Genese.—The statement of Dr. Mills and the condition of the tooth exhibited by him, which shows a speck upon it, leaves the matter plain to my mind as to the cause of the disease being other than the one he has stated. I happened to come from a country in which the tomato is a rarity, being almost as rare as the peach, and yet I found there evidences of the same action on the teeth which I have seen here. Since residing in this country I have known people who were accustomed to eat the tomato in its raw state, as taken from the vine during the season after ripening, instances of that kind coming under my notice throughout a period of twelve years, and yet I have not observed any erosion of the teeth from that cause. In a district which I have been visiting occasionally for the last year or so, and which is a great tomato-growing district, there has been serious trouble with the teeth, but the cause of it has not been attributed to tomato-eating. I visited some of the cottages there on matters of business other than dentistry, and, while there, I found that the attending physician had prescribed for the trouble with the teeth from three to ten grains of calomel, to be taken several times a day. You may imagine the effect of this upon the teeth.

I think that Dr. Mills will find, on close investigation, that the tomato, as an article of food, is one of the most healthful vegetables we have, and that, if eaten when ripe and in proper condition, the

acid from it is no more destructive to the teeth than is the juice of an apple, the pear, or any other fruit in ordinary use. It is well known that the strawberry has a very acrid, pungent juice; and its effect on the teeth is somewhat peculiar. It will whiten the teeth, but if you insert in the mouth a paper test, five or ten minutes after a quantity of strawberries have been eaten, you will not find any acid remaining. The same thing may be said of other fruits from which considerable acid is derived and from which no injurious effect upon the mouth is apparent.

Before reaching any conclusion on the subject, I suggest that we await the results of further investigations, made on a more scientific basis than were those which have been stated; and the results we may possibly receive at our next meeting.

Dr. Mills.—I simply wish to put on record the actual facts in regard to the remarkable conditions to which I have called attention, so that, in the course of time, when the matter is again brought up, it may be known that these facts have been ascertained and stated. In doing this, I would say that I am not surprised that the theory I have advanced has met with a good deal of criticism. Indeed, I almost expected to hear it said, after what I have alleged as having happened in my own experience, that I had filled myself with calomel from the crown of my head to the soles of my feet. I know that such an inference may be drawn from what has been said. But I also know that there are medical authorities who state that the action of the tomato on the teeth is exactly the same as that of calomel. I also know, from what I have read on the subject, that certain facts have been demonstrated in regard to the effects produced by tomato eating. It is stated that, since the introduction of canned tomatoes into the empire of China (about two-thirds of all the tomatoes put up in the United States are consumed there), cancer, a disease that was comparatively little known there, has increased to an extent of from forty to fifty per cent. This is all attributed to the eating of canned tomatoes. By some it is attributed to the action of the muriatic acid on the solder, forming a lead salt. Nevertheless, it is our duty to meet facts as we find them. We have a practical one here. We should keep our eyes open and deal with these facts fairly and without any preconceived notions of our own. If the cause of the trouble is in the tomato, let us say so; if it is not, let us ascertain that fact.

Dr. R. Grady.—I understand Dr. Mills to state that he wants to go on record as having discovered the disease known as tomato-poisoning.

Dr. Mills.—Yes, sir.

Dr. Grady.—But Dr. Waters has stated that this matter is already on record; that it has already been written upon by Dr. Rawlings.

Dr. Mills.—With the permission of Dr. Grady, I would like to ask, through the chair, if Dr. Waters can inform me as to the date at which the writings referred to make their appearance.

Dr. Waters.—They appeared in the *Southern Dental Journal* some five or six years ago, and were in reply to articles written by Dr. Riggs, of Hartford, Conn., in connection with pyorrhœa alveolaris. Dr. Rawlings took very strong grounds in support of the theory that tomatoes were the original cause of pyorrhœa.

Dr. Genese.—The theory of tomatoes causing pyorrhœa must be regarded as exploded, because pyorrhœa existed in Europe, particularly in England, long before the tomato was introduced there.

Dr. Mills.—Allow me one moment. My statement was that I simply wished to go on record as to what I say. Of course, if the gentleman named has written on this subject, he antedates my statement by two years.

Dr. Grady.—By five years.

Dr. Mills.—If it is claimed that he antedates me by five years, I would call attention to the fact that I have been talking on this question and speaking to my friends upon it for three years. Now, I would like to speak upon the treatment of pyorrhœa alveolaris in general.

Some eight or nine years ago I had a case of a female patient who was troubled with what is now known as pyorrhœa alveolaris. The treatment of the patient embraced the usual remedies,—viz., Robinson's remedy, iodine and carbolic acid, the chisel, the gouge, and chemical compounds. The success of this treatment seemed to be uncertain, as the patient returned year after year, and I was almost ready to abandon my efforts in despair of effecting a cure in the case, which was only one of many like cases. For a period of twelve months all traces of her were lost. At the expiration of that interval she returned to have a tooth filled. Remembering the young lady's case, I examined her mouth to ascertain what ravages the disease had made, when, to my surprise, I found that all symptoms of pyorrhœa alveolaris had disappeared. I questioned her closely as to the remedy she had been using. She informed me that, having noticed that a cousin of hers in Washington, whom she was visiting, had beautiful teeth and healthy gums, she learned that her relative, and the sisters of

her relative also, had healthy mouths; they for years had been using as a tooth-powder carbonate of magnesium. Upon their advice she had, for twelve months, been using the same. She was conscious of the fact that her gums had become healthy and her teeth firm in their sockets, but her improved condition did not specially attract her attention as it did mine. I reflected upon the case and concluded that, if the fact was as she stated it, the carbonate of magnesium must have made the cure. I then began to experiment with the drug and continued my experiments for several years. First I used it as a dentifrice, and directed patients to rub their gums with it at night, before retiring. Observation showed that from six to twelve months were required to effect anything like a change for the better except in some few cases, which responded promptly in six or eight months. Even in cases in which a patient would not submit to the operation of having the deposits removed from around the necks of the teeth it acted promptly. After further reflection upon a method of improving the preparation for use as a dentifrice, I tried boric acid in combination with carbonate of magnesium in the proportion of from one-half to one drachm of the acid to one ounce of the carbonate of magnesium, with sufficient winter-green to flavor. This was intended to act as a powerful germicide and to prevent fermentation. And the preparation has invariably given the utmost satisfaction, my patients returning after an interval of forty-eight hours and assuring me that they had experienced the greatest relief.

While I do not assert positively that the application of these remedies has, in every instance, effected a perfect cure, I am able to say, upon the assurances of friends to whom I have given the formula, and who have personally witnessed the results of its application, that the action of it has been almost miraculous in producing a cure. Dr. McDonald told me that with him the remedy worked most satisfactorily. He did not strictly follow my directions, but used the formula for injections into the pockets while patients were at his office, and he expressed himself as being astounded by the improvement which resulted. So far as my own experience has gone, I can say that I think we have in these chemicals that which, if it does not effect a thorough cure, will certainly ameliorate the disease.

Dr. Genese.—Mr. President, I had the pleasure of listening to Dr. Mills on this same subject some three or four years ago; and I am able to say that I have given the preparation referred to by him a thorough trial in every sense of the term, and have found it

wanting. It has no effect upon teeth affected by pyorrhœa other than that which plain water would have. The carbonate of magnesium is insoluble. It will glide over the deposits upon the teeth and leave them just as they were before. In pyorrhœa we have an insidious disease that lies far below the surface. The preparation produced by Dr. Mills will not cure that disease, for the reason that the disease lies at a point beyond that which the preparation reaches.

I am indebted to Dr. Adair of the Southern Dental Association for an idea contained in an article in one of the numbers of the *Southern Dental Journal*, and which I have put in practical operation and have found to be exceedingly valuable in practice. I cannot remember the date when it appeared, but the substance of the article is that he advises, in these cases of pyorrhœa, and particularly where we have that condition in which pus is oozing around the gum margin, to flatten a piece of platinum, bringing it to a nice shape, then taking away all but the point, and leaving the shaft so fine that it will not injure any part with which it comes in contact. This is then heated somewhat, but not too hot. It is then dipped down around the teeth, between the cementum and the gum-lining. You thus cause the destruction of the tissue, though only to a very slight extent. Dr. Adair claims that the reaction in the deposit, the fresh tissue in the place of that which is destroyed by the cautery, will cure the pyorrhœa. Not very long ago I saw a practical demonstration of this. I have tried it in two cases, and they have succumbed entirely to the treatment. One of them was that of a long-standing fistula of the superior maxilla, with pyorrhœa extending from the central incisor to the first bicuspid. All the other teeth were gone. The entire treatment was confined within a period of about three weeks, when the patient reported himself as cured.

Dr. Mills.—I am rather surprised to hear Dr. Genese make the statement which he has just made. He is on record as having, on several occasions, recommended carbonate of magnesium for pyorrhœa alveolaris. In another place he is on record as recommending boric acid, carbonate of magnesium, and chalk. As this preparation was originally suggested by myself, and as I have heretofore spoken about it, I thought that Dr. Genese would give me the credit for it, just as he has given credit to Dr. Adair for his preparation for the treatment of pyorrhœa. I am surprised that he should come here to-night and say that he had found it to be unsuccessful and of non-effect, particularly as I stated at the outset of my remarks that,

with the magnesia alone, an interval of from six to twelve months was required before any decided effect or improvement would be shown.

I believe that magnesia is a splendid thing to use in these cases, and my belief has been strengthened since I have been reading on the subject. I believe, too, that pyorrhœa alveolaris, so called, is nothing more nor less than an anæmic condition of the tissues surrounding the teeth, and that magnesia (having an affinity for iron in the blood) carries the blood corpuscles to the parts and the surrounding tissues and builds them up, producing a healthy action and flow of blood. Boric acid, being a germicide and an antifermentative as well as the winter-green, simply adds more strength to the compound.

Dr. Genese.—I wish to say that I may have mentioned these preparations at the meeting of the Southern Association, or at one of the Northern meetings, simply as remedies untried. If my memory serves me, I made that statement shortly after the meeting at which Dr. Mills had recommended these preparations. As I have now tried them for three years, I am able to speak experimentally. I believe you all know the action of magnesia, and I will ask you, as scientific men, whether, in your opinion, magnesia is going to have any effect upon the lining membrane of the gum tissues or on the teeth when they are attacked by pyorrhœa, as claimed by Dr. Mills. It is known to you that we must first have mechanical action to remove the deposit, and then we must have some pungent preparation or antiseptic to do away with the pus formation.

Dr. A. J. Volck.—I desire to mention a case of a lady, a native of Bermuda, who was in this city on a visit during the summer and remained during the following winter. She came to my office some time in September. Hers was one of the most pronounced cases of what is called pyorrhœa alveolaris. It occurred to me at the time to try the remedy which Dr. Mills had spoken of once in our meeting. I sent to that gentleman for the prescription, and he very kindly gave me a copy. I applied that remedy in the case of this lady, and continued to apply it for about seven weeks, when the treatment proved to be entirely successful. I was profoundly impressed with what I saw of the promptness with which the disease yielded to this treatment. That case is the only one in which I have seen this treatment made use of. I have no doubt there are cases in which it may be used successfully.

The lady remained here for some three or four weeks after the

use of the remedy was discontinued, and I saw no unfavorable change in her condition and no indication of a relapse. She supplied herself with the preparation for her future use in the event of a return of the trouble. I directed the patient to rub it into the gums and around the teeth, particularly in the evening, before she retired, and to allow it to remain there. I also instructed her to use it as a tooth-powder during the day, as she had opportunity.

The President.—Is the formula for that powder the one that has been stated by Dr. Mills?

Dr. Volk.—The formula is the same.

The discussion of the subject here closed.

UNION MEETING OF THE CONNECTICUT VALLEY
DENTAL SOCIETY, THE NEW ENGLAND DENTAL
SOCIETY, AND THE CONNECTICUT STATE DENTAL
ASSOCIATION, AT SPRINGFIELD, MASS., OCTOBER
23, 24, AND 25, 1889.¹

(Continued from page 167.)

DISCUSSION OF "PRACTICAL POINTS IN DENTAL PATHOLOGY AND
THERAPEUTICS."

Dr. C. A. Brackett.—In opening the discussion of this subject, it was my purpose to speak briefly of one or two classes of cases that are not the most satisfactory of those that come into our hands for treatment. Most of us have patients from the higher walks in life, patients of abundant means and of best dispositions in caring for their dental organs themselves. We also have patients that are the reverse of this; and then we have all grades of character between these two extremes. Probably very few of us escape having patients for whom sacrifices are made of organs that ought to have been attended to. The patients regret these sacrifices, and we regret them, and would gladly change the circumstances that decide these things, if we could. It may be of frequent occurrence for a patient to say, "I have teeth which I would like your advice on. They have given me a good

¹ Reported for the INTERNATIONAL DENTAL JOURNAL by Geo. A. Maxfield, D.D.S., Holyoke, Mass.

deal of trouble, but I would like to have them filled and saved." The patient is not abundantly blessed with means, or has not had time; and these are the difficulties of the situation. It seems to me that here is an opportunity to do some of the most profitable work. If not with that tooth, then with reference to the other teeth; and if not for that patient, then for the friends and family who will be influenced by that patient to come to you. We then can say to this patient to this effect: "These teeth have been neglected most sadly, permitted to ache, to ache repeatedly, to ache until you could no longer tolerate it, and you are forced to ask my assistance in saving them for you. It is most desirable for you to save these organs. I shall be happy to use my very best efforts possible to restore them to usefulness; but you should clearly understand these facts: that every hour's pain, of suffering endured with exposed pulp, in its present pathological state, which adds to the uncertainty of the results of my efforts, and to the lessened usefulness of the teeth to you in the future, has placed certain difficulties in the way. In order to get the teeth back to their normal condition you have got to retrace all the steps that have been taken. If they have been aching only a few hours, my work is comparatively easy; if at intervals of weeks or of months, my work is complicated, and it will consume a great deal of your time and be of greater trouble to me."

This can be explained to the comprehension of the intelligent patient who has the disposition to do the right thing; and is an opportunity for us to be very useful, to explain to patients the desirability of giving the dentist an opportunity to exercise his skill under the most favorable circumstances. The patients are not to blame for doing as they do. The judicious saving of the natural teeth is of the greatest importance. We do see instances in which the patient comes to us and asks to have a molar extracted; that is the only substantial bulwark they have in holding the jaws together correctly. We see the unfortunate disregard that has led to the extraction of all the molars on the upper and lower sides of the mouth. It seems a matter of the greatest importance.

Another class of unsatisfactory patients that comes to us consists of children with aching deciduous teeth, and on this subject I would be glad to be instructed myself. There is hardly a patient who comes in my office that I have more dissatisfaction with than children from poor, ignorant families who are suffering pain from exposed pulps. The child is suffering, and there is not the understanding, time, money, or disposition to make conservative opera-

tions. In some families, if the temporary teeth were cared for in the best possible way, it would absorb all the bread earnings of the family. In these cases I know no other way than to pursue the one that does the least harm. If I can keep the temporary tooth in its place, I like to do it. If I can make applications myself, I will do so. It may be a case that needs local depletion, or if an extreme case, it may need the application of caustics. If I could not do better, and feeling especially that the second set of teeth would have no more care than the first set was having, and that the molars would be sacrificed at an early age, as the easiest way out of difficulties,—the children need rest from pain and the parents need their sleep,—I should feel justified in extracting the tooth. It would be a matter of choice of evils. If there are other ways to get out of these difficulties, and if any others have suggestions to make, I shall be glad to learn about them.

Dr. E. A. Stebbins.—Is there any objection to putting arsenic in a temporary tooth?

Dr. Brackett.—I have not the fear of arsenic that many men have. If I were sure I was applying it to an exposed pulp and not to a perforation in the division of the roots, and have sealed it in to my satisfaction so as not to come in contact with the gum, I should have no fear whatever. In such cases as ordinarily exist, I should make the time of application as short as possible. I have no hesitancy whatever in using arsenical paste. We know that in nineteen out of twenty of these cases the pain is inside of the cavity in the temporary molar. Very likely the gum is growing into the cavity. The sealing of the destructive paste in these cavities must be done very carefully. I seal it with that which I think will make the sealing most secure,—gutta-percha or whatever else will do it. In regard to the pain, it depends on when the arsenic is applied; and the way in which that treatment is received will depend upon the state in which the pulp has been. In a pulp that has been exposed for months to all manner of irritation, no ordinary means of relieving pain will at all suffice. "There is no peace for the wicked" until destruction has been accomplished. All means will fail; you may keep your patient for hours, and yet the pain does not cease. In an instance of that kind you may apply arsenic and have everything comfortable quickly. That pulp is in a state of low vitality, and to my mind the arsenic just pushes it over. On the other hand, if you apply the arsenic to a recently exposed pulp in a large molar of a vigorous person, you get an entirely different result.

Dr. Maxfield.—What would be your treatment of temporary teeth after applying the arsenic?

Dr. Brackett.—That must depend on all the circumstances of which I have been speaking. Try to do the best under existing circumstances. In many cases, after removing the arsenic, that is all we can do for the teeth. The parents who would do nothing for the care of their own permanent teeth will do nothing for the children's temporary teeth. If you can make everything clean and wholesome, and fill them, by all means do it; and if you cannot, then do as well as you can. If we are to speak of the best thing to do for temporary teeth, in cases of this kind, it would be the removal of the destroyed pulp, and thoroughly to disinfect the canals and cavities. We may be justified in filling the cavity and providing an exit, which is an objectionable thing to do with permanent teeth. The circumstances may be such that we may think this is the best way out of the difficulty.

Dr. N. Morgan.—What do you fill the canals of temporary teeth with?

Dr. Brackett.—If I can clean them to my satisfaction, and have everything in a healthy state, I fill with a solution of gutta-percha in chloroform.

Dr. Stebbins.—Between what ages would you apply arsenic to the temporary teeth,—or does age make any difference?

Dr. Brackett.—It does make a difference. If the age approaches the time for these teeth to be lost, there is less occasion for using anything in the roots, whose absorption has already commenced.

Dr. W. F. Andrews.—I would like to know whether a tooth is more liable to pain if the arsenic is put in without uncovering the pulp or less liable by freely uncovering it?

Dr. Brackett.—The instance must be very rare where it is necessary to place arsenic in a tooth when there is no exposure. I should say it is best always to uncover the pulp.

Dr. Stebbins.—Did you ever see any difficulty in the development of the permanent bicuspid where arsenic has been placed in the temporary molar?

Dr. Brackett.—Never saw or heard of such an instance.

Dr. Stebbins.—When a person comes to you with a permanent tooth aching, what are the indications warranting you to devitalize the pulp?

Dr. Brackett.—I am guided first by the history of the case. The longer the tooth has been a source of offence, the less the chances are for successful capping. Besides the history of the case

that the patient gives me is the appearance of the pulp as I investigate. A great failure in our treatment of exposed pulps has been in not discriminating as to its condition in the great range of the pathological state in which the exposed pulp may be. If the pulp were as large as the finger, and we could see the extent of the inflammation,—and ninety-nine out of every hundred commence in this pathological state,—we would not treat them so indiscriminately as we have in the past. There are individuals for whom you may cap an exposed pulp with about as much certainty of success as you fill an ordinary simple cavity. There are, we may say, governing circumstances that almost in themselves guarantee any pulp-capping, if the right conditions are observed. There are patients for whom any attempt at pulp-capping will be sure to result disastrously.

Dr. A. H. Gilson.—I am particularly interested at this time in what Dr. Brackett has said, as he has given us very good advice about how to treat these cases. I have a case which I would like to speak of. A patient recently came to me, and on examination I found a pulp which was very nearly dead. I treated this tooth to the best of my ability, and she came back the next day for me to finish filling the tooth, and in the mean time the tooth had not given her any trouble. When she left me I cautioned her not to eat any ice-cream or drink any ice-water; I afterwards found out that she went directly from my office and had a sherbet. On Sunday, which was two days after, she came out to my house, her face being badly swollen, and, as I had nothing at my house to treat teeth with, I tried to get her to go to a dentist up-town who would relieve her. She would not do this, but insisted on my going in to Boston, to my office, to attend to her. This I positively refused to do. She went off quite in a huff, and the next day I received a letter from a lawyer saying I was to be sued for malpractice, and I expect the sheriff at my house when I return to serve the writ.

To protect myself, I have had to place all my office fixtures, etc., out of my hands so as not to have a keeper placed there. This case will be tried before a jury, and if they defeat me, I can appeal to a higher court.

This is a question that concerns us all, as we are all liable to be tripped up in this manner. She says I caused the pain. What is there that we do that does not cause pain?

I would like to ask Dr. Brackett if he has noticed any difference in the development of the enamel of the bicuspid caused by the application of arsenic to a temporary tooth?

Dr. Brackett.—I, of course, shall admit that this may be possible. I have heard of half of the tongue being destroyed from the same cause; but I have never known of any instance of the kind.

Dr. Stebbins.—Will you give us your formula of arsenical paste?

Dr. Brackett.—I modify it in all manner of ways. Ordinarily, I use the preparation that White sells. Sometimes I use the clear arsenic, modifying it with the addition of acetate of morphia, oil of cloves, and various modifications that seem to me most likely to make the application with as little affliction to the patient as possible.

Dr. S. S. Stowell.—I would like to ask Dr. Brackett if he would make any distinction in applying the arsenic, whether the pulp was in a state of inflammation or in a state of rest? When it is in the state of inflammation, as we understand it, it is not capable then of absorbing the drug, and great pain is caused if applied at that time.

Dr. Brackett.—In any case where it is decided to destroy the pulp, I should first endeavor to relieve the pain; and to do this I would first treat with anodynes. If that failed, I would apply the arsenical paste. This condition, I apprehend, to be a condition of acute inflammation, accompanied with severe pain. In such a case as this, if I did not deem it advisable to apply the arsenic, I would try agents that would lessen the pain, to give opportunity for the inflammation to subside. If I deemed it best to apply the arsenic, and this being seriously painful, I would ask the patient to endure it only for a limited time. I would tell the patient to come back, if the pain was so severe he could not bear it, and I would take out the arsenic, and try the effect of an anodyne. An application for a limited time in this way will relieve the pain. It may not be successful immediately, but in a short time the pain will subside. So within an hour after you take out the arsenic your patient will be comparatively comfortable, and you can then replace the arsenic without having much more suffering.

Dr. Müller.—How long before the pulp will die?

Dr. Brackett.—I know of no therapeutic circumstance more uncertain than this. The pulp may be dead in a few hours and perhaps not in six months. I knew of an instance that came under the hands of one of Boston's best practitioners, for whom I have the highest respect, and one whom you all know. He tried most determinedly for two years before being successful in destroying a pulp. I have no hesitancy in leaving the arsenic in the tooth,

provided it is properly sealed in. Sometimes we meet cases where a large portion of the pulp is dead, yet portions remain in the apex of the root that are a source of pain to the patient. This small fragment is a cause of dissatisfaction and discomfort so long as it exists. I would in such a case as this place the arsenic in the canals. I have, in teeth of a dense, hard structure, made applications for nine months before being able to destroy the pulp. It is a principle with me to carry the destructive agent against the tissue which it is intended to destroy.

Dr. Stebbins.—How long a time between the applications in the nine months?

Dr. Brackett.—I should be guided by the case. If a greater portion of the pulp has been destroyed with a great deal of difficulty and had extended over considerable time, and I have to make an application to destroy the remainder, after a week take out the dressing. If no progress has been made, try again; and after two or three weeks the progress has been slight, the next time leave it a longer interval. If my sealing is secure, I am satisfied to leave it for a long period. Another point is, the pulp may seem to have vitality left, as you first attempt to remove it, but often with a little persistence you can get it all away and avoid a second application.

(To be continued.)

CONGRESS OF THE ITALIAN ODONTOLOGICAL SOCIETY.¹

AFTER a lapse of five years the Sixth Congress of the Italian Odontological Society, that was to have been held in Rome in 1884, was held in Genoa, in the rooms of the "Societa di Conversazioni Scientifiche," on the 1st and 2d of November of last year.

Two meetings were arranged for each day,—from 10 A.M. until 12 M. and from 2 to 4 P.M. The president, Dr. Campani, being absent, the vice-president, Mr. C. W. Dunn, senior, of Florence, took the chair. With the usual formalities the Congress was declared open, and the vice-president pronounced the inaugural address, expressing at the same time a vote of regret for the president's absence on account of ill health. Twelve new members

¹ Reported by William Dunn, Jr., D.D.S., Florence, Italy.

were proposed and accepted, after which the Hon. Secretary, Mr. C. S. Bright, of Genoa, proposed some modifications of the then existing statute,—that the Congresses should be held yearly, and that the officers should be appointed from among those present; the modifications were passed after some discussion.

The first thesis was read by Signor Ballerio, of Milan, "On Secondary Dentine and Nodular Calcification." Signor Ballerio finds that in each case the calcific deposit is due to a slow and constant irritation, but whereas it is physiological in the formation of secondary dentine, the process is pathological when it results in nodular calcification.

Dr. Schaffner, of Florence, concurred in Signor Ballerio's ideas. He thinks that if it were possible, by extremely delicate manipulation, to remove the odontoliths from the pulp, the pulp would return to its normal condition. He agrees that such an operation is, for the present, purely theoretical, never having been accomplished. The safer way is slowly to devitalize and extirpate the pulp.

The next paper, by Mr. C. S. Bright, "Whether it be Well to leave Decalcified Dentine or not," was ably handled by the gentleman. He recognizes the advisability of preserving the pulp, even if only a few filaments are left, and therefore would leave decalcified dentine in a cavity if it were protecting a pulp. The decalcified dentine can be well disinfected and often is recalcified later on by the pulp.

Signor Damiano Mela, of Genoa, would make a difference between cases. In some cases decalcified dentine, well disinfected, is the best protection for the pulp, which recalcifies it in time; but in some cases the pulp dies under the decalcified dentine, and an abscess may be established. He does not think disinfection necessary if the cavity be perfectly dry.

Dr. Schaffner thinks that, once a tooth is well formed and calcified, its pulp is not of such great importance to it. He recounts a case of one of his own teeth which, under a nitrophosphate filling, was quiet for seventeen years; later on he suffered from an irritation of the ciliary nerve, which passed away when the tooth was unstopped; refilling the tooth brought on the trouble again, and finally the pulp was devitalized. He is now circumspect in preserving pulps, and prefers to destroy in dubious cases rather than run the risk of a chronic irritation or neuralgia. He mentioned how, according to Miller's latest researches, micrococci precede decay, almost into the healthy dentine, and that therefore it would be extremely difficult to sterilize perfectly any softened dentine.

The meeting was adjourned till the afternoon.

Signor Ballerio, of Milan, presented the next thesis,—“Orthodontia.” The greatest number of irregularities treated are in the upper incisors and cuspids, the difficulty was to find a fulcrum from which the force could be exerted, and to find a fixed point on the tooth to be moved on which to exert the force. Complications arose in the shape of the arch and teeth, the articulation, the crowding of teeth, and the state of the gums and mouth; this opened the discussion, which was animated; special cases were described by Dr. Carreras, of Leghorn, and Signor Solari, of Bologna.

The rest of the afternoon was occupied by discussions on the new dental law to be proposed,—that all those desiring to practise dental surgery in Italy must be doctors of medicine. It was decided to telegraph to His Excellency, the Minister of Public Instruction, to thank him for the interest he had taken in raising the standard of the profession in Italy, but to beg that he would consider the modifications the society would offer,—that is to say, to restrict the time of education from seven to three years.

At half-past six the forty and more members met for the social dinner at the Restaurant della Concordia, where good humor reigned throughout. The king, queen, prince, ministers, and president were toasted.

The next morning was occupied by theses,—“Disinfection,” by Signor Ballerio, and “Pyorrhœa Alveolaris,” by Mr. Bright. Both were discussed; much was said about Signor Damiano Mela’s treatment of pyorrhœa alveolaris with finely pulverized sulphate of copper, which seems to be very successful.

A very interesting communication from Professor Miller, of Berlin, was read, on “The Antiseptic Properties of Filling-Materials.”

Dr. Miller fully explained two methods of testing the antiseptic property of filling-materials; one by dropping pieces of the filling in a growth of fungi, and the other by using decayed dentine that had been under fillings for some days. As the result of these experiments he comes to the conclusion that copper amalgam has the most marked antiseptic effect of all fillings; and that amalgams are more or less antiseptic in their action according to the proportion of copper that they contain. Some preparations of non-cohesive gold are markedly antiseptic in their action; this action disappeared as soon as the gold was annealed, and for this phenomenon Dr. Miller can as yet find no explanation.

The afternoon was passed in demonstrations. Mr. Dunn showed his adaptation of the ether spray and compressed air for painless operations on and about the teeth.

Dr. Schaffner showed a new saliva-ejector, of his own invention, and an automatic mallet to be worked by compressed air, which acted beautifully.

Signor Mela showed casts of irregularities, most noticeable among which was the model of upper maxillæ with five permanent molars on each side.

Dr. Herbst, of Bremen, sent some very interesting specimens of his fillings by the rotary method, and other specimens of his system of glass crowns and inlays.

Enamel and porcelain inlays were shown by Mr. Dunn, of Florence, and several samples of mechanical work were contributed by Signor Solari and Signor Casotti, of Leghorn.

Drs. Miller and Herbst were unanimously elected honorary members.

The next Congress will be held at Turin.

THE AMERICAN DENTAL SOCIETY OF EUROPE.—
SEVENTEENTH ANNUAL MEETING, PARIS, AUGUST
6 AND 7, 1889.

First Day's Proceedings.—Morning Session.

THE chair was taken, at ten o'clock, by Dr. W. St. George Elliott, president.

REPORT OF THE MEMBERSHIP COMMITTEE.

Dr. Elliott.—Gentlemen, I want to apologize for the delay this morning. I came here at 9.30, but as I left the minutes of the last meeting at my boarding-house, which is near the Arc de Triomphe, I was obliged to return there and get them. We will commence the meeting by calling the roll, when Dr. Patton, the secretary, will read the minutes of the last meeting, which he proposes to do in a condensed form. I should like to have your opinion on the matter, if that proceeding will be agreeable to you? Our last secretary took the minutes in detail, but he had not apparently the time nor the inclination to write them out afterwards.

It was agreed that the minutes should be read in a condensed form as suggested.

The call of the roll.

Members Present.—Dr. L. C. Bryan, Basel; Dr. J. W. Crane, Paris; Dr. I. B. Davenport, Paris; Dr. C. V. Du Bouchet, Paris; Dr. W. St. Geo. Elliott, London; Dr. F. Forster, Berlin; Dr. N. S. Jenkins, Dresden; Dr. W. D. Miller, Berlin; Dr. W. R. Patton, Cologne; Dr. Ed. Rosenthal, Brussels; Dr. W. Sachs, Breslau; Dr. Hoffmann, Wiesbaden; Dr. Schaffner, Florence; Dr. I. H. Spaulding, Paris; Dr. A. Wetzel, Basel; Dr. N. W. Williams, Geneva; Dr. Chas. Adams, Leipsic; Dr. Fred. Merrill, Milan.

Guests Present.—Dr. Bonwill, delegate of Odontological Society of Pennsylvania; Dr. Warrington Evans, Washington; Dr. Rosenthal, Sr., Liège, Belgium; Dr. Thomas, Vilbon, Spain; Dr. W. E. Royce, Tunbridge Wells, England; Dr. Mitchell, London; Dr. A. C. Hugenschmidt, Paris; Dr. C. Agabey, Athens, Greece; Dr. F. Du Bouchet, Paris; Dr. Theo. Frick, Paris; Dr. G. C. Dabool, Paris; Dr. C. P. Terry, Milan; Dr. L. A. Obrian, Jr., Paris; Dr. W. F. Kelsey, Marseilles; Dr. E. A. Bogue, New York; Dr. F. C. Collett, New York.

Dr. Elliott then greeted the guests, thanking them for their presence, etc.

The guests then retired, while the members attended to the official duties of the society. On conclusion of the same, Dr. Elliott opened the professional duties of the meeting.

Dr. Elliott.—Dr. Miller has some preparations with him, and it is very desirable that we should have them at once. I would also say that Dr. Bonwill is here, and he and Dr. Mitchell have proposed giving clinics. Dr. Du Bouchet has been kind enough to offer facilities for doing so. Most of us, of course, are interested in the exhibition; but still there may be some members who may perhaps be sufficiently interested to stay for the clinics. Dr. Mitchell proposes to put on a crown, and Dr. Bonwill, particularly, wishes to speak about his articulator and to exhibit his instruments.

Dr. Miller.—I think he has already been invited by the Executive Committee.

Dr. Crane.—I spoke to him personally about it, as being the only member here.

Dr. Elliott.—He wished to give a clinic in London, but I rather dissuaded him from it, as I knew there would not be sufficient general interest to get an audience.

Dr. Miller.—He gave us a clinic in Berlin, and I think we had one hundred persons present, mostly students.

Dr. Elliott.—I will ask Dr. Miller to give us his communication on the antiseptic action of filling-materials.

Dr. Miller.—Gentlemen, I wish to demonstrate some culture experiments, showing the antiseptic action of different filling-materials. It will scarcely be questioned by any one that, in a great many cases, if not in all, the probability of success in filling teeth would be greatly heightened if the filling-material could be made to exert a permanent antiseptic action upon the walls and margin of the cavity. I have tested a great number of different filling-materials, in order to ascertain whether they exert any antiseptic effect; and I have found one material which possesses this action in a high degree,—that is, copper amalgam.

I have employed two different methods for testing the antiseptic action of filling-materials. By the first method I inoculate a tube of ordinary nutritive gelatine with a fungus which grows rapidly at room temperature without melting the gelatine. I liquefy the gelatine and pour it upon a horizontal glass plate. While it is still soft, I drop into it pieces of the filling-material whose antiseptic action is to be tested. A plate so prepared usually becomes cloudy in about twenty-four hours through the development of innumerable colonies of bacteria. If, however, the material possesses an antiseptic action, no fungi will develop in its vicinity, and it will consequently appear surrounded by a zone of transparent gelatine.

In this manner I have tested nearly all the filling-materials now in use. I have found that copper amalgam possesses considerable antiseptic action. Not only freshly mixed amalgam, but even very old fillings and pieces of dentine from teeth which had been filled with copper amalgam, show strong antiseptic action. Gold amalgam possesses very little, and in most cases no action whatever. Phosphate cement, freshly mixed, is very slightly antiseptic; old fillings have no action. Gutta-percha, as naturally suspected, is inactive.

These facts you will see clearly demonstrated on the plates which I now show you. You will also notice that I have strown some iodoform on one of the plates, and that the growth of bacteria has not thereby been interfered with in the least. It is a very remarkable phenomenon, which I am not able to explain, that certain preparations of gold also appear to be antiseptic. Pack's pellets, quarter-century gold foil, Abbey's foil, are all of this character, whereas other preparations which I have examined exhibit no anti-

septic action. All preparations of gold lose their action on annealing. It has been supposed that this property of the gold is brought about by something added to it during the manufacture, or that the gold accumulates oxygen upon its surface, which, as we know, sometimes exerts an antibacterial action.

Another, perhaps more instructive, method of showing the antiseptic action of filling-materials is the following: Take a number of teeth extensively decayed, in which the pulp is, however, not exposed, excavate partially so as to leave a considerable quantity of carious dentine in each cavity; fill the cavities with the different materials to be tested, and put the teeth in a mixture of saliva and bread, where they should remain for some three days; then remove the teeth from the mixture, wash them and dry them and remove the fillings. The filling is most easily taken out by placing the crown of the tooth upon an anvil and giving it a short tap with a hammer; the filling usually flies out, exposing the untouched surface of dentine. Now remove a small particle of the carious dentine with a sterilized instrument, place it upon a sterile plate of nutritive agar-agar, then put the plate in a moist chamber at a temperature of about 38° C. In the course of two or three days the piece of dentine will be found to be surrounded by a whitish growth of fungi. If, however, the filling-material has exerted such an antiseptic action upon the dentine as to devitalize the fungi, or if the dentine has taken up a sufficient quantity of the antiseptic agent in the filling-material to become itself antiseptic, then no growth of fungi will form around the piece of dentine.

Having tested nearly all of the ordinary filling-materials by this method, I have found that pieces of dentine, taken from a tooth which had been filled with copper amalgam, never show any development of bacteria when brought upon the culture-plate, whereas pieces taken from teeth which had been filled with gold amalgam have invariably shown a fine growth of bacteria. The same is also the case with teeth filled with gutta-percha, with phosphate cement, and with tin-gold. In nearly all cases pieces of dentine from teeth filled with oxychloride of zinc have also given rise to a development of fungi, much less profuse, however, than that which forms around most other filling-materials.

From these results, it is very clear that copper amalgam exerts a very powerful antiseptic action upon the walls of the cavity containing it, and that there is no doubt that it thereby contributes greatly to prevent the recurrence of caries under the filling.

The idea that the combination of tin and gold is antiseptic is

utterly fallacious, and the recommendation of this combination for filling root-canals, on the ground that it destroys micro-organisms by galvanic action, is unscientific and unfounded. It is a well-known fact that strong currents of electricity are required to exert any marked action upon the development of bacteria. We might, for instance, kill an ox by means of a shock of electricity, without doing any harm to the bacteria, which might be in him. I speak of this in particular because I know of more than one gentleman who has adopted the practice of filling root-canals with tin and gold, with this object in view.

DISCUSSION.

Dr. Elliott.—I would like to ask Dr. Miller whether these experiments do not go to prove that bacteria are the sole cause of the decomposition of the root-canals; generally speaking, we only consider it one of the causes; those who have had much to do with copper amalgam know that it does not stop decay.

Dr. Miller.—The antiseptic action of copper amalgam may diminish or cease altogether in the course of time. I only mean to say that, other things being equal, copper amalgam will prevent decay longer than the ordinary amalgams. There is no means by which a pulp can be decomposed except by bacteria. In caries the decomposition of the softened dentine is caused by bacteria; being an albuminoid substance, it is dissolved by the bacteria, just as an egg is dissolved in the stomach by the pepsin.

Dr. Elliott.—I think the most important factor is in the defect of the teeth, in construction, and has nothing to do with bacteria; otherwise, how could people who are not cleanly go through their lives without decay?

Dr. Jenkins.—I should like to state that what Dr. Miller has arrived at, we, many of us, have also arrived at in a practical way. Most gentlemen have had very similar experience in regard to the untrustworthy nature of iodoform, and I am glad to hear Dr. Miller make this statement in regard to tin and gold; for he is one of those who thoroughly advocates the proper use of it. I believe those who have had the widest experience, claim for it only its advantages as a mechanical stopping. I should like to ask Dr. Miller if he has made use of the experiments which he has shown us, with oxychloride of zinc?

Dr. Elliott.—There is a general impression in the profession that the iodoform is decomposed.

Dr. Mitchell.—Mr. President, I don't know, but I must rather

correct our president in regard to the decomposition of iodoform ; that can be very easily established by using a hot-air syringe. The iodine can thus be liberated, and the reaction found there by the starch test. I have given my method of using it, placing a pledget of cotton saturated in alcohol and iodoform, and then throwing the hot air from the large bulb syringe through the cotton ; this liberates free iodine.

Dr. Elliott.—Of course the only inference is, why not use iodine direct ? The strongest tincture of iodine is the "Dental Tincture," recommended by Dr. Flagg, of Philadelphia.

Dr. Miller.—In answer to Dr. Elliott, let me say that we know by experience that caries does not take place on the exposed surfaces of the teeth, but we find caries appear in fissures and secluded spaces in teeth where the food lodges and where the fluids of the mouth do not circulate ; consequently, the acids most active in caries cannot be those introduced into the mouth with foods, etc., but those formed within the mouth by fermentation.

Dr. Elliott speaks of the fissures in enamel and defects in developments of the teeth, etc. ; these are what we call the *predisposing* causes of caries ; they play a great part, and improperly developed teeth will become carious much sooner than teeth which are of good structure. We know very well, however, that cracks and fissures can never act as *exciting* causes of caries.

Dr. Elliott also mentioned that people who never cleaned their teeth are frequently exempt from decay. This, however, cannot be taken as proof that it is not advisable to keep the teeth properly clean, because in some cases the teeth are of such perfect structure that they do not become carious in spite of the uncleanness. Moreover, it is a fact, especially with people who consume an excess of nitrogenous food, that, when the uncleanness goes so far that putrefaction of the remains of food takes place, then we do not obtain an acid, but an alkaline reaction ; and in this case, of course, we could not expect the occurrence of caries. It is for this reason that flesh-eating tribes—for instance, the Esquimaux—very rarely suffer from caries, because the food which they consume is such as does not give rise to acid reaction by fermentation. These flesh-eating tribes are less troubled with caries than the common house-dog.

In considering the subject of caries there are, of course, a vast number of different factors, predisposing as well as exciting, which must be taken into consideration, before we can come to a proper conclusion as regards the nature of dental caries. It would, how-

ever, lead us too far to enter into a discussion of this question at present. In regard to the question of Dr. Jenkins, I have tested oxychloride of zinc, and have found that in the fresh state it possesses considerable antiseptic action; it ceases to be antiseptic, however, soon after it has thoroughly hardened.

Dr. Mitchell.—I would like to ask Dr. Miller how he accounts for the preservation of teeth by gutta-percha?

Dr. Miller.—Gutta-percha fillings, if properly made, will exclude all particles of food from entering. Spaces do not form between the filling and the wall of the tooth where gutta-percha has been used, consequently fermentable substances cannot enter. We do not get the acid which must be there always before the dentine can be decalcified.

Dr. Elliott.—There is a peculiarity in regard to that. We know that an infinitesimal defect in a gold filling is fatal.

Dr. Miller.—If we have a small leakage in a gold filling, there is a tendency for the enamel to break away, and in the course of time the defect will get gradually greater. This tendency to crumble away does not exist around gutta-percha fillings; and herein lies their chief preservative power. The reason is not hard to find. Every time we bite on a large solid gold filling a shock or blow is thereby communicated to the walls of the cavity; and if these are not perfectly solid and intact, they will, in the course of time, suffer from these repeated blows. Gutta-percha fillings do not receive such blows, because they are not contoured, and the lighter blows which they do receive are not transmitted to the walls of the tooth.

Dr. Mitchell.—I should like to ask Dr. Miller how it is that, in removing a gutta-percha filling, provided the rubber dam has been applied, there is always a trace of moisture? That has been my experience with gutta-percha as a filling.

Dr. Miller.—I think I can make a gutta-percha filling which will seal the cavity thoroughly; besides, in case of an imperfect gold filling, you can insert an excavator between the filling and the walls of the cavity. This you cannot do in case of a gutta-percha filling.

Dr. Mitchell.—I cannot understand why this infinitesimal amount of moisture should not act in a detrimental manner to the teeth.

Dr. Miller.—I have an experiment which has been going on since 1882, which shows that saliva, when it putrefies or ferments, does not have any action upon the tooth structure; if your fluid, which appears between the filling of the teeth, can be renewed from time to time, and if the fluid contains sugar, which should ferment, then you

would undoubtedly have, in the course of time, a detrimental action on the teeth. The very fact that it cannot be renewed would limit its action.

Dr. D. Kelsey.—I would like to ask the doctor, if it is meat which preserves the teeth of Esquimaux, what preserves the teeth of Hindoos, who never eat meat?

Dr. Miller.—Perhaps the healthy mode of life helps to prevent the caries; perhaps the physical character of the food; some kinds of food clean the teeth themselves. Wild races suffer much less from caries than we, because we have all our things cooked, and our teeth do not have the necessary gymnastic action. Finally, the chief answer that I have to give to the question is that the doctor is not quite right in his statement. Hindoo races are by no means exempt from caries, some of them suffering to a very great extent.

Dr. Elliott.—I can corroborate the statement. I find that in China there is a great deal of caries; not so much as in Europe; but were you to ask any foreigner if the Japanese have good teeth, he would say yes. I would like to add that, of all nations in the world,—and I have been in all countries,—the Japanese are far the worst in the matter of irregularities.

Dr. Mitchell.—Can our president give us any reason for this condition?

Dr. Elliott.—I could not say; at the time I went to Japan, there were a large number of dentists; they usually had their stands on the street, and, as a rule, they would make you a set of teeth in a very short time. It is to me a very remarkable thing that the Japanese get their knowledge of science from the Chinese, and have no artificial teeth whatever, except that they make two or three incisors merely for appearance. The Japanese are the inventors of the suction principle of plates. They are made of wood, very accurately, and the mastication, which is done on the back of the plate, which is covered with copper nails, is exceedingly useful. In regard to the amount of caries, we have no statistics to guide us in the matter. My student was the first Japanese who took up dentistry in Tokio, and he established a practice there.

Dr. Jenkins.—Is there not reason to believe that the Japanese are a mixed race, which may account for the irregularities?

Dr. Elliott.—I do not think that that is sufficient reason to account for it.

Subject passed.

(To be continued.)

Editorial.

DENTAL HYGIENE.

THE past decade has marked an era of advance in our knowledge regarding the etiology of dental diseases, until now the terms sepsis, antisepsis, infection, and disinfection are as common in our literature as pulp conservation and mechanical dentistry formerly were, and yet how many of us use the terms intelligently? How many can explain the pathology of alveolar dental abscess, pyorrhœa alveolaris, etc., according to the new school of dentistry?

The rapid advance made in our knowledge of the etiology of dental diseases makes it necessary to revise the teachings which have largely held up to the present day.

When it is understood that nearly if not all the diseases pertaining to the oral cavity are the result of unhygienic conditions, then the importance of the subject will be better appreciated. The mouth is known to be a hot-bed in which nearly all forms of micro-organisms find a suitable habitat and culture media. It is true that all are not pathogenic, that is, disease-generating, but many such do find their way into the oral cavity, and from thence into the alimentary canal, the lungs, and through the mucous membrane into the tissues of the body, thereby producing local or general infection. Nearly all the diseases of the mouth sooner or later become complicated by the presence, if not the direct action, of germ-life. Not a few owe their origin to micro-organisms. Suppuration of the gums and the pulp, as also alveolar abscess, is due in most cases to direct infection from the oral cavity. That stage of Riggs's disease which is known as pyorrhœa alveolaris is undoubtedly caused by infection. The disease may, and probably does, begin as a catarrhal process, but the stage where pus is formed indicates the presence of some one of the pus-forming micro-organisms: as it is now generally admitted that pus is formed through the action of certain well-known germs. Then decay of the teeth themselves, as has been so ably demonstrated by Dr. Miller, is caused by acid fermentation in contact with unexposed surfaces of the teeth.

The mouth forms the open portal to the system. The teeth

stand as sentinels to guard the entrance, and their care should form the most important subject for discussion in our literature. It is true that we do devote most of our time to their conservation after they have been to a greater or less extent destroyed by the influence of unhygienic conditions, but knowing as we now do the etiology of so many of the diseases pertaining to the mouth and teeth, it becomes our bounden duty to give more attention to informing ourselves and patients regarding the prophylactic measures necessary to prevent their inception. The loss of a tooth, in the light of our present knowledge, should be looked upon as an evidence of incapacity upon the part of the operator, provided he has the full confidence and co-operation of the patient. Children should be sent to the dentist from early childhood and all irregularities corrected and all pits and fissures filled to prevent decay and full directions given as to the care of the teeth. If the patient implicitly follows these we can promise him that he will be able to retain his teeth throughout his natural life with only now and then a filling, a desideratum not to be despised.

In view of the fact that the subject of oral hygiene has not been as fully treated in our dental literature as its importance demands, it seems that there is room for some elementary work in this direction, so that the busy practitioner may acquire the needed instruction which will enable him to understand the phenomena with which he daily comes in contact, so as to intelligently explain the same to his patients without having to spend his leisure hours in painstaking experiments.

SOUTHERN DENTAL JOURNAL.

DR. CATCHING, editor of the *Southern Dental Journal* since its inception, has resigned in favor of Dr. H. H. Johnson, who, in assuming the editorial position, says, in answer to a query from the *Archives*,—

“It is true there has been a change in the editorial department, but its present management is determined that it shall not fall below its former high standard of excellence thereby, and by diligence and care we hope to see it improve as it grows in age, and to keep apace with the profession as it advances to a higher standard of perfection.”

Dr. Catching does not intend to retire from journalistic work entirely, but will issue an annual review of dentistry in the form of a compendium which will be sold on subscription only. There seems to be a field for such a work, and Dr. Catching will undoubtedly make it a success. We wish both the fullest success in their new fields.

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DENTAL CHEMISTRY AND METALLURGY. By CLIFFORD MITCHELL, M.D. Chicago: W. T. Keener, 1890.

This is the second edition of the *Dentist's Manual of Special Chemistry*, revised, rewritten, and including the following parts: 1. Essentials of Chemistry for Dental Students. 2. General Chemistry for Dental Practitioners. 3. Laboratory Course in Elementary Chemistry for Dental Students. 4. Laboratory Course in Dental Chemistry and Metallurgy.

The author rightly claims that a knowledge of chemistry is of the greatest value to the dental practitioner, and he predicts that, as the special requirements of the dentist are different from those of the medical man, in time the dental student will have a distinct course in this branch. The work is well written, the matter neatly arranged, and printed in good large type.

ARTIFICIAL CROWN- AND BRIDGE-WORK. By GEORGE EVANS. Second Edition, Revised and Enlarged. 547 illustrations. Philadelphia: S. S. White Dental Manufacturing Company, 1889.

The rapidity of growth of this kind of work, and the consequent changes it has undergone, may be judged by the fact that in less than a year after the publication of the first edition of his work the author has deemed a second necessary. It is fully up to date, and embracing, as it does, the methods invented by, and the practice in vogue among, the most advanced dentists, it must prove of much value to the progressive practitioner.

Foreign Correspondence.

LETTER FROM PARIS.

TO THE EDITOR:

Although it is rather late to speak to the readers of the *INTERNATIONAL DENTAL JOURNAL* of the International Dental Congress of Paris, yet it may not be without interest to them to learn in brief of the most important communications received.

In the section of anatomy and physiology, normal and pathological, I would mention a learned paper by M. Rothmann, of Budapesth, on the "Patho-Histology of the Pulp and Periosteum." He brought to the support of his conclusions a beautiful series of microscopic specimens which give great credit to M. Rothmann as a microscopist.

Permit me also to call your attention to two communications of your correspondent, one, "The Teeth of the French," and the other an "Essay on the Terminology of the Principal Diseases of the Teeth and Mouth." I consider that it would be of great advantage in the study and discussion of obscure points in the science of odontology, if dentists would unite on one common nomenclature. On account of the general familiarity with the pathological anatomy of the mouth and dental organs, it seems to me best to make this the foundation or beginning for our classification. Any of our readers interested in this matter will find it treated at length, and the classification proposed, in the October number of *L'Odontologie*.

In the section of therapeutics the subject of diseased pulps received a long and exhaustive discussion. We are not convinced of the wisdom of filling-root canals immediately on opening. Personally I treat the canals and fill temporarily with gutta-percha, filling permanently after the second, third, and fourth sitting, according to the conditions of the case. By this method I claim to have only from three to five failures in a thousand. Dr. Cunningham's statistics give four cases of periostitis out of forty-five treated.

M. Heide, of Paris, gave his method of filling cavities with inlays cut from natural teeth, and M. Guérini, of Naples, with coral of whitish color.

Cocaine and nitrous oxide are used to a great extent in France,

owing somewhat, probably, to legislation, which prohibits general anæsthesia by those who do not have the degree of M.D.

M. Bleischsteiner, of Gratz, always uses the aqueous solution of cocaine, first sterilizing the water with a weak solution of corrosive sublimate. His method is to inject at several places, but only a little in each place. M. Poinso, of Paris, advises a solution in oil of vaseline, medicinal,¹ or oil.

His formula is,—

R	Pure cocaine,	5 centigrammes ;
	Liquid vaseline,	50 "
	Pea-nut (or pistachio) oil,	50 "

This solution is not toxic. I have given the reason in the "Aid to Memory of the Surgeon Dentist." The aqueous solution is quickly absorbed by the blood-vessels and carried to the nerve-centres, while the oily solution remains longer where it was injected and has more of a local effect. During the three years that I have used this formula I have had no accidents whatever, whereas with the aqueous solution I have seen alarming symptoms of syncope, lasting for hours, and in some cases for days. The inconvenience of this preparation is its lack of fluidity and consequent difficulty of injecting it, and more especially if low temperature has caused a recrystallization. For this reason I have modified the formula of M. Poinso a little. My method is as follows: Into a tube (or phial), of a capacity of two cubic centimetres, put from three to five centigrammes of cocaine (my cocaine is not the hydrochlorate but the pure alkaloid); to the crystals add two drops of chloroform, then equal parts of pea-nut oil and vaseline oil to make a quantity sufficient to fill a hypodermic syringe; that is to say, one gramme or one cubic centimetre. To avoid rapid recrystallization of the cocaine, it is well to warm slightly the phial and also the syringe. Like M. Bleischsteiner, I inject at several points and put the point of the syringe into the tissue but a short distance. By this method there is no fear of accident, and the operation is less dreaded by nervous patients. It is a good idea, after the extraction is completed, to force out, if possible, the injected liquid by pressing the gum hard between the fingers.

In *prosthetic dentistry* I will mention the interesting presentation of M. Michaëls, of Paris. In making metal plates, he treats the mould so that the die will give the plate a slightly wrinkled ap-

¹ Not to be confounded with mineral vaseline.

pearance; on the lingual side he flows solder into the depressions (*striæ*), thus making the plate ridged enough to withstand the strain of mastication.

M. Michaëls made before the members of the Congress a plate having four teeth in forty minutes. The process, I believe, has a great future.

The restoration of the face and maxillæ has been entirely transformed in France, thanks to the good work of M. Martin, of Lyons. The most startling and at the same time the happiest idea of our eminent *confrère* is the *immediate* application of the appliance. The readers of the INTERNATIONAL DENTAL JOURNAL, who are engaged in facial restoration, know how difficult it is to successfully put in position an appliance where there has been resection of the jaw, and the consequent falling away and retraction of the soft tissues left without osseous support. M. Martin's remedy is to make in advance a reproduction in black rubber of the bone to be removed. As soon as the operation is completed, the rubber is fitted into the place where the bone has been removed, and is then held in position by a platinum screw. Over this artificial maxilla the surgeon fastens the flaps of soft tissue with sutures, and the appliance is left in place until the healing is complete. My readers will be astonished, as I myself was, to learn that the false maxilla will be tolerated in contact with so large a wound. The surgeon, M. Olier, who has often employed M. Martin's appliance, makes the following statement: "Is it prudent to disturb, or at least fill, a fresh and irregular wound with a foreign body that may become a permanent source of irritation, and of whose retention there may be doubt? It is remarkable to see how the healthy bone will tolerate the platinum screws used to hold the appliance (hard rubber) in place. It is always, without doubt, a question of antiseptics and the property of heat that are necessary to success. By the manner in which the piece is constructed it is easy to keep it in place. It is sufficient to frequently and methodically irrigate the parts."

It seems to be quite probable that it is on account of the frequent irrigation that the piece is tolerated. M. Martin has made this easy by having the appliance furnished with grooves or canals of irrigation to which a rubber tube can be applied.

I cannot describe here minutely the method of construction and procedure of this class of operations, but will refer the reader to M. Martin's excellent book on the subject.¹ In this book may be found,

¹ "De la Prothèse immédiate appliquée à la Résection des Maxillaires." Par C. Martin, Chez Maisson, Paris, 1889.

also, other important information in regard to facial restoration, to which your eminent co-laborer, M. Bonwill, and dentists who witnessed the demonstration by M. Martin at the *Exposition Universelle*, will bear testimony.

The clinical sessions were of great interest. M. Bonwill demonstrated his method of gold filling. M. Chauvin transplanted a root on which had been placed an artificial crown. MM. Bleischsteiner, Michaëls, and Rothmann exhibited their work and microscopic slides, which have already been mentioned. M. Cunningham, of Cambridge, showed his diagrams used in teaching at the National Hospital, London. M. Telschow exhibited a dental engine worked by compressed air, also a mallet and saliva-pump attached to the same. He also showed an improved clamp.

MM. Michaëls and Kuhn showed their operating rooms where compressed air is used for the engine and also for running the dynamo.

In regard to the fears expressed by the INTERNATIONAL DENTAL JOURNAL and many other American journals that it was our wish to injure the Congress to be held in Berlin, we have proved that this was not our end. Before adjournment, the Congress gave expression to the wish for another reunion whenever such favorable circumstances should present themselves as was the case with the Congress of Paris.

I hold in grateful remembrance the cordial reception given us by our American *confrères* at Washington. My colleagues of l'École Dentaire, of Paris, and myself have done our best to give a fitting reception to those dentists who have honored us with their presence. We were particularly happy to have had with us our American friends, Bonwill and Harlan, to whom we wish to renew our expressions of regard.

You will see, my dear Editor, that the Congress of Paris has been most useful and happy in its results. It has assisted the progress of dentistry, and strengthened the bond of friendship between the members of the profession throughout the world.

P. DUBOIS,

President of the Odontological Society of Paris.

Translated by Dwight M. Clapp, Boston,

Foreign correspondent *L'Odontologie*.

Domestic Correspondence.

TO THE EDITOR:

Society "Incident."—At a recent meeting of the New York Odontological Society, a gentleman present (not a member), in response to a general invitation by the president to relate "incidents of office practice," took advantage of the occasion for the purpose of reporting a case under his observation, which, in substance, was as follows:

"A lady was under his care for treatment. In her teeth were upward of forty fillings. Six of the teeth were devoid of vitality. Her teeth were also exceedingly loose,—a marked case of pyorrhœa alveolaris,—and both teeth and gums were causing much pain. Indeed, it was a bad case all around. The lady's former dentist was reported as a 'prominent' member of our specialty; prominent through his writings and teachings; a professor of operative dentistry in one of our 'prominent' dental colleges, located in one of our prominent cities, yet his name was modestly withheld.

"This prominent professor had permitted this lady's teeth to get into this deplorable condition, and the fact must be widely known and published, to the discredit and shame of this unworthy, yet 'prominent' professor, who, instead of occupying the professor's chair, might better take a seat on a bench with the 'boys' and learn how to do what he was pretending to teach to the youthful aspirants for diplomatic honors."

This prominent professor of the prominent college was certainly unworthy of his high calling,—at least was so pictured to the members of the Odontological Society, who patiently listened to the rehearsal of these woes. They could imagine this prominent professor as simply a fraud, a botch, a humbug; careless, remiss, incompetent, and totally unfit to practise dentistry. And yet he holds a position as a professor of operative dentistry in a prominent dental college! "Human impudence—to what a height hast thou arisen!" Why are such things permitted?

But, to be serious, why should such a case have been thus stated at a society meeting? What does it signify, except to traduce in a semi-blind manner a fellow-member of our calling? Who knows anything of the circumstances connected with the case referred to? Are dentists responsible for all the cavities that form in human

teeth? Are they responsible for the neglect of individuals to have them timely attended to? Are they to be blamed because teeth are allowed to become incrustated with scales of salivary calculus and loaded with other filthy deposits? And are they to be blamed for all the dead teeth that exist? Is it not possible for an individual to have "six teeth with dead pulps" without being a victim of malpractice? Thousands upon thousands of dentures are covered with unsightly stains and their interstices filled with mischievous accumulations. Many mouths can make an exhibit of rows of pulpless teeth or crownless roots. Must the dentist, who, perhaps, has had but a semi-occasional opportunity afforded him by a careless patient to keep his or her teeth in order, and who visits him only when driven by desperate pain, or when mastication has become almost a "lost art," be blamed for not staying the inevitable results of carelessness or indifference?

Really, it is not a nice thing to do to bring up this sort of (so-called) "Incidents of office practice" before society gatherings. It is a decided breach of courtesy, and should be severely rebuked. Reports brought by patients should be taken with many grains of allowance. Few individuals are willing to blame themselves for their sins of omission, and especially is this the case if they can make a pack-horse of some unfortunate dentist on whom they can saddle the responsibility for the condition of their shocking bad dentures. Circumstances and conditions must be taken into account before judgment can be fairly passed. Who can get at the exact truth in such matters? One might as well try to correctly picture the life, character, habits, and disposition of a deceased stranger by viewing the corpse!

Be charitable, ye who dwell in glass houses, and let him only who is proof against criticism hurl the damaging missiles.

"X."

TO THE EDITOR:

A NEW organization has been formed among the dental students of the University of Pennsylvania under the name of the James Truman Dental Society. The first regular meeting was held on Thursday evening, March 13, 1890, in the college building. The following officers were elected for the ensuing year: J. A. McKee, Jr., president; Louis Stephan, vice-president; W. T. Arrington, Jr., secretary; George J. Frey, treasurer. The society offers to its members a field for discussion and active investigation of all such subjects and questions that may be suggested in their course of study.

W. T. ARRINGTON JR., *Secretary.*

Current News.

CHICAGO AND VICINITY.

DR. E. S. TALBOT, whose labors in the field of Dental Irregularities are well known, has made a thorough and scientific examination of the mouths of the "cave and cliff dwellers," who have been on exhibition under the charge of Lieutenant Schwatka, and states that the results were interesting and instructive. They will be given to the profession later on.

MR. E. E. CLARK, of Newark, N. J., has been in the city, arranging matters with a view of establishing a plant for the manufacture of his deposited plates in this city. A number of prominent dentists appear to have taken an interest in the matter.

THE Chicago Dental Club appears to be in a flourishing and growing condition, and arrangements have been made for publishing its proceedings, in future, in the INTERNATIONAL DENTAL JOURNAL.

DR. CUSTER, Dayton Ohio, says too much value cannot be placed upon the power of personal magnetism in the dental operator. The exhibition of tender sympathy in a painful operation does much to mitigate its severity. Everything lies in obtaining the absolute confidence of the patient. If the operator shows that he is perfectly familiar with the operation, that he knows exactly what to do, giving no evidence of bungling or embarrassment, no hesitation in the choice of instrument or remedy, there will be less dread and apprehension, the imagination will not be roused, and, the subjective image not being formed, the actual will not be realized.

DR. GREEN, New Albany, suggests that, in setting a porcelain inlay in cement, the piece of tooth be made as hot as can be held in the fingers before pressing home in the cement. The cement will set much harder.

CHLORIDE of zinc stands at the head of the list as an obtundant of sensitive dentine. It both coagulates and dehydrates, but its action is painful, and, as it is not self-limiting, it must be used with caution.

DR. A. E. BALDWIN, Chicago, overcomes sensitive dentine by the use of sure, sharp instruments, with rapid motion and light touch.

SOCIETY NOTICES.

THE Iowa State Dental Society will hold its Twenty-eighth Annual Meeting at Dubuque, Iowa, May 6 to 9, 1890. All are invited to attend.

PROGRAMME OF DENTAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

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|---|-------------------------------|
| ADDRESS. | By <i>J. L. Williams.</i> |
| Relation of Tropho-Neuroses to Diseases of the Mouth and Jaws, with Special Reference to Syphilitic Necrosis. | By <i>G. Frank Lydston.</i> |
| How the Vascular Supply is connected with the Teeth. | By <i>A. O. Hunt.</i> |
| Vascular Tumors of the Mouth, and Treatment by Injection. | By <i>John Marshall.</i> |
| Electro-Therapeutics. | By <i>John L. Gish.</i> |
| The Value of Illustration in the Lecture-Room. | By <i>L. D. McIntosh.</i> |
| Adenoid Growths and their Effect on the Mouth. | By <i>E. E. Briggs.</i> |
| Cure for Cleft Palate by a Double-Flap Operation and Closure with the buried Tendon Suture. | By <i>H. O. Marcy.</i> |
| Diseases of the Gums and their Treatment. | By <i>J. Taft.</i> |
| Irregularities of the Teeth connected with Neurotic Conditions. | By <i>E. S. Talbot.</i> |
| Hereditary Dental Anomalies. | By <i>William S. Sherman.</i> |

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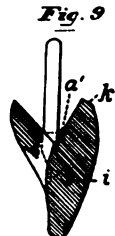
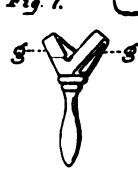
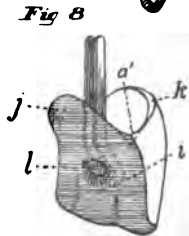
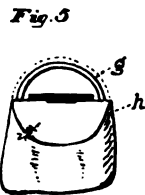
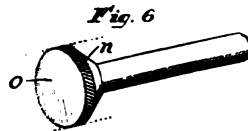
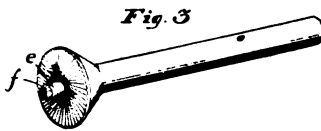
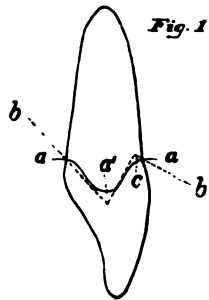
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THE DENTAL CROWN.

(From Garretson's Oral Surgery, Fifth Edition.)

THE International Dental Journal.

VOL. XI.

MAY, 1890.

No. 5.

Original Communications.¹

THE DENTAL CROWN AND ITS ENABLING METHOD OF REMOVABLE BRIDGE-WORK.²

BY WILLIAM H. GATES, D.D.S., PHILADELPHIA.

ADVANCE in the art of dentistry, while so pronounced and gratifying in most respects, has been singularly slow in producing a satisfactory substitute for the natural crown.

When carefully examined, in fact, it will seem not a little remarkable that the radical errors and absurdities of that old-time method known as "pivoting" are the actual basis of the prevailing method of to-day. These absurdities arose from the anatomical mistake of supposing that a through and through cut, from the labial to the lingual curve of the gum, was the proper line of division between the crown and the root. This mistake was manifestly excusable coming at a period of dental science when such crude devices were its exponents in art; but we must no longer overlook this anatomical relation, as the natural outline of the end of the root is suggestive of the best possible form for the crown.

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in this country.

² Read before the Odontological Society of Pennsylvania, Saturday, February 1, 1890.

The distinctive features of pivoting were the concave foundation in the end of the root and the tooth rudely joined therein by the dowel, or "pivot," as it came to be called from its tendency to turn; but these are likewise the basal features of the so-called porcelain crowns. In both—the Gates-Bonwill and the Logan—the change relates only to the *make-up* of the so-called crown and its pivot, the outer part being of porcelain, while the basal portion of both alike is of plastic material added thereto because of its adaptability to the pivot joint in the end of the root. To have termed either of them a *crown* was incorrect, as no crown has a convex base. They are simply composite pivot-teeth, and the post of each is the core of its pivot.

An objection to the existing pivoting method is, that it cuts away the natural base susceptible of being clasped like a rock and interposes in its place a base that throws the entire support upon the post-pivot, and thereby forms an adverse leverage within the end of the root, the extreme length of the composite pivot-tooth being the long arm, and the radius of the end of the root the short arm of the lever. This tendency to split the root becomes still greater through the vertical diameter, as the tooth, confined by the post between the lateral inclined planes, acts as a positive wedge. In view of these facts, which are witnessed also by the immense strength required in the platinum posts, we must certainly have increased respect for the stanch qualities of root material that has so rarely given way under such adverse conditions.

A further objection to this pivoting method arises from the impossibility of making a proper joint where there is no guide but guesswork; no opportunity to see or know the relation of the two surfaces when applied; no guide for the proper occlusion with the opposite jaw; no recourse, indeed, but to cut and try for some sort of makeshift.

Because of these difficulties the suggestion of the amalgam base was thought to be a great boon, and the porcelain was countersunk to receive it. There was a grievous disappointment, however, because of the mechanical impossibility of getting the amalgam to a proper position in so large a single quantity, which soon became apparent. Resort was then had to the perishable plastics, because less rigid before setting, a gold band being employed to protect them, and likewise act as a *bandage* for the ever-threatened root.

But why must we infringe on the pericementum, establish bacteria nests, and disfigure the tooth with this bandage of gold?

If we take nature's suggestion we will replace the natural crown

with a substitute that presents a true mechanical joint, into which the end of the root projects, and which is therefore properly called a crown. Such a crown I have provided, and hence have termed it *the dental crown*.

Referring to the drawings for its illustration (see plate), the line *a a*, Fig. 1, shows the anatomical outline and the strong defensive angle of the end of the root, while the dotted line *b b* indicates the slight modification necessary to make this angle available as a perfect crown-seat, a ledge, *c*, Figs. 1 and 2, being formed at the outer base against which the crown may solidly abut. This ledge neutralizes the inclined plane which would imperil the crown, and as the crown seat represents a trifle less than a right angle, the plane *d* supplements in the most ample and positive manner the support afforded by the ledge, with the result that we have here a mechanical crown-seat of the very highest order, affording permanent protection both to the root and to the crown.

To make this crown-seat, a facing-wheel, Fig. 3, and a gauge, Figs. 4 and 5, are provided, which are very exact and practical in application, because each has a supplemental form that allows one plane to be finished before the other is begun. The facing-wheel is file-cut on its front face. Its diameter covers one face of the crown-seat, which it quickly and definitely forms while firmly sustained by a self-centring point, *e*, Fig. 3, which, separately made, has been hermetically sealed into its mandrel; and as this centring point cuts only on its front face, *f*, Fig. 3, which is also its largest diameter, the wheel is thereby confined to the selected position while free to adjust the plane of the crown-seat to any inclination desired.

The gauge, made of sheet metal, represents a kind of skeleton of the body and the outer lobe only of the crown, the body of the lobe being represented by a circular crib, *g*, Figs. 4 and 5, over which its outer face, *h*, rests as a hinged cover. The natural crown having been reduced to the line of the gum, and the enamel removed, this gauge is simply applied against the end and labial face of the root while forming the outer face of the crown-seat by the facing-wheel. The occlusion with the opposite jaw, the mouth being closed, determines at once the length of the crown required; and by uncovering the crib in testing, to be sure of its proper contact, this outer and determining face of the crown-seat is carefully formed, the contour of the gauge proving the position correct. Thus we have an unfailling guide, a direct open view, and a thoroughly-controlled, painless, and effective instrument for overcoming,

right at the start, the paramount and, by the old method, most formidable difficulties of crown-setting,—viz., obtaining the correct position and the proper adaptation.

The supplemental or face-extension wheel, Fig. 6, is of similar diameter to the facing-wheel, but cuts only on its peripheral face. Resting flat on the plane already formed, it simply extends that face of the crown-seat as far up under the free edge of the gum as the selected crown requires. Of this form there may be a pair, cutting right and left.

The supplemental gauge, Fig. 7, is an oval band or crib bent edgewise to the standard angle. Guided by the outer face, this quickly determines the correct position of the inner face of the crown-seat, which is formed by a facing-wheel in the right angle attachment.

It will be observed that the coronal end of the crown-seat extends beyond the enamel line at the ridge. This, like that at the ledge, is a useful variation from the saddle-shaped, anatomical outline of the root, as it projects a solid line of support of unexampled height into the centre of the crown. It is slightly trimmed at each end to admit its reception between the lateral wings *a'* of the crown so provided.

The crown itself requires no trimming. It represents the standard of joint as suited to the crown-seat. The special advantage, in an economic as well as an artistic sense, in having at hand perfectly-adjusted crowns in porcelain, need not be enlarged upon. It may be mentioned here that in the manufacture of this crown it is contemplated to embed into the porcelain just within the peripheral border of the angle a slight rib, or a perforated mat of platinum, in order always to have exact uniformity of the gauge.

An important feature also embodied in this crown consists in employing a staple as the bond between the crown and the root. Entering the inner face of the crown, its loop is bent backward and embedded in the porcelain towards the outer face as shown at *i*, Fig. 8, thus securing the most powerful combination with the crown-seat. This arrangement provides an open passage directly through the crown and the pulp-canal while the crown is in place upon the root, and affords facilities for the attainment of highly-important purposes.

Instead of having the approach to the canal sealed with impenetrable porcelain, it is a manifest advantage to have an opportunity to reopen in case of pathological conditions not apparent at the time of closing; and the open passage is of still greater importance

at the time of setting the crown, for it permits the centre of the crown to remain open and undisturbed until the treatment can be made under favorable circumstances. Thus, instead of wasting time at the start in a difficult diagnosis of the case, the crown-seat is at once formed, the canal enlarged, and the crown set with gutta-percha; the presence of a slender pin embedded there leaves the canal open when withdrawn; and on removing the crown at a subsequent sitting, the treatment is made with every advantage of free access, an open view, and the opportunity to make make deliberately whatever tests may be necessary.

This open passage also makes available an important discovery touching the material employed in the setting. Gutta-percha, having shown unusual tenacity and power of resistance as a thin layer between this crown and its crown-seat, requires only the assistance of a firmly-embedded staple to make it serve as a permanent setting. But this direct access is essential in order to embed the staple properly.

The convenience and simplicity of such an adjustment is instantly apparent. A thin layer of gutta-percha, adapted to the base of the crown, is warmed and impressed upon the crown-seat, which, being moist, allows the crown to withdraw the gutta-percha as an impression. The excess at the border and immediately around the staple being trimmed away, it is warmed and replaced until the crown practically rests against the crown-seat. At this point, if the mounting is to be temporary, two slender sticks of gutta-percha are warmed and pressed within and upon the opposite edges of the staple, and embedding also a small ordinary pin between them. The point of this pin, made blunt, will be slightly in advance of the gutta-percha when inserted into the canal, and the gutta-percha should be at least an eighth of an inch in advance of the ends of the staple, so that in condensing it may obtain firm contact with the sides and retaining-points of the canal. The canal and root having been well dried, the loosening and withdrawal of the pin will leave the case in a safe and successful condition. But the permanent placing is still more simple, as, when the gutta-percha setting has been adjusted to the base of the crown and the root dried, nothing remains but to partly fill the canal with a soft mix of amalgam, carry the crown to place after warming, and finish by thoroughly introducing very dry amalgam until mercury will no longer appear.

In making this permanent closing of the canal the insertion and withdrawal of a slender steel pin, reaching almost to the foramen,

will leave a closed tube in the amalgam for more convenient approach in case of necessity.

It should here be stated that amalgam itself is perfectly adapted for setting this crown, as a soft mix, placed between the crown and crown-seat, permits the crown to go fully and easily to place, leaving only a mere film of amalgam between, the excess of mercury being withdrawn at the same time with that in the canal; and the only part of the joint facing outward, namely, the ledge, is easily provided with a fender excluding the amalgam, so as to appear, if at all, only as a fine line of gold. But the extraordinary convenience, entire concealment, and staunch character of gutta-percha as a cement between two solid surfaces, otherwise sustained in close apposition, make amalgam unnecessary, and add to the laurels of this invaluable material, gutta-percha.

The reaming of the canal is preferably deferred until the crown-seat is formed, as any improved position desirable to be given to the crown will require ordinarily only a slight corresponding change in the position of the staple at the mouth of the canal without resort to bending; and since the dislodging force against the crown, hitherto born by the post, is here sustained by the crown-seat with its immense reserve of force, we can widen laterally, or make such other shaping of the pulp-canal as suits any purpose of advanced ideas.

But the question will be asked, How shall the position of the crown-seat be determined when the end of the root is far decayed or already cut into concave shape? Simply by inserting into the pulp-canal, temporarily, a pivot of orange wood, the outer end of which, cut to a wedge-shape, will give support to the centring bar of the facing-wheel. In such cases, after the crown, set for a few days upon these partial outlines with a slight excess of gutta-percha, has pressed the morbid gum back to its normal condition, a section of corrugated tubing, having its outer end likewise cut to wedge-shape, is to be permanently set into the enlarged canal by means of amalgam, which is then simply built out far enough to restore the crown-seat. As all tendency to split the root is interrupted by this simple arrangement, it is obvious that roots otherwise impossible of preservation may in this manner be saved. Boxes of these wedge-pointed pivots and sections of corrugated tubing may be kept at hand.

Lastly, the facility of the open canal offers a unique advantage for bridge-work. All banding is set aside and a strong, simple, and removable attachment is made to this crown. A lingual gold face

set into the crown its own thickness, *j*, Fig. 8, including a short hood at the cutting end, is easily secured by a suitable screw, *l*, Fig. 8, provided with a platinum counterpart previously embedded in amalgam in the pulp-canal.

In conclusion, it gives me pleasure to say that I have this method of mounting bridge-work protected in the United States Patent Office for the profession, and that they shall not be subject to the payment of office rights for the use thereof.

CORRECTING IRREGULARITIES BY THE SPRING OF GOLD BANDS.¹

BY B. S. BYRNES, D.D.S., MEMPHIS, TENN.

I REGRET to say this mode is yet comparatively new in the profession, although demonstrated thoroughly at the Southern Dental Association, held in New Orleans in the spring of 1885, and published in the *Dental Cosmos* for May, 1886. To-day I know of but few dentists who fully appreciate the merits of the principle.

Dr. Kingsley, in answer to the query as to what kind of fixture he used for regulating teeth, says, "Some variation of an old appliance must be invented for almost every new case." I will go further, for in all of my complicated cases I find that I use one, two, three, and sometimes four variations from my first invention for a certain case, and after passing certain stages will go back to the original appliance; not that the others were failures, for they did their duty as far as they could, but the original would do more, taken from that point, than its substitutes would do if retained; the substitutes did better to pass the work over certain stages than the original could do. To quote Dr. Clark on failures, I will say that I have been unable to obtain the retainer by demanding half of the fee in advance; but will say this much in favor of the principle which I advocate: that all of my patients claim that after wearing the fixture the first day they find their teeth are much more comfortable while the fixtures are on than when they are taken off; for I too "have had them to bring fixtures to me in their pockets, having taken them off the night before to attend a ball."

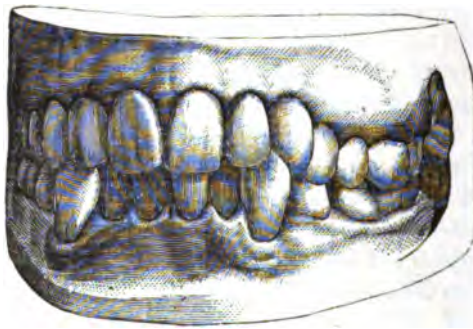
¹ Read at the Union meeting held at Springfield, Mass., October 24, 1889.

In correcting irregularities there are three important points which I keep constantly in mind and labor for faithfully, to accomplish the objects I have in view. First, the more even arrangement of the teeth in the arch; second, the physiognomy, so as to have the features harmonize well; third, and last though not least, the occlusion of the teeth, for thereon depends the success of the case. In following this last point we are simply aiding nature to do a work which she was too feeble to perform when called upon. These three points are likened unto the Holy Trinity, for they are, properly speaking, three in one.

I practise no part of my profession by a fixed rule. I condemn none of the materials used by dentists; neither do I say I never extract a tooth. I study well the nature of each individual case as it presents itself, then follow the dictates of my judgment towards correcting its abnormality.

For illustration, I will give my reasons for treating two cases so entirely different that presented similar appearances of irregularities. The first case, published in the *Cosmos* for May, 1886 (see Fig. 1), shows a prominence of the inferior cuspidata, patient

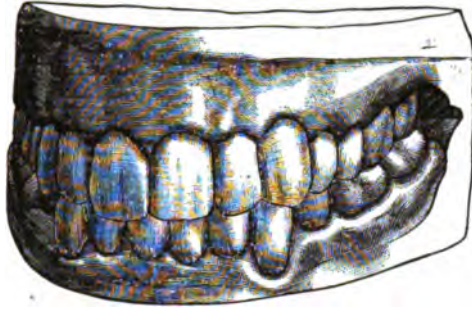
FIG. 1.



twenty-seven years of age, with wisdom teeth well erupted and crowding all the teeth forward, making the inferior maxillary square and angular at the chin. I at once without hesitancy extracted the first bicuspsids, which were perfectly sound, and with simple gold band, on either side embracing first molar, bicuspid, and cuspid, drew the cuspidata back into place until they occluded on the distal surfaces of the superior cuspidata; having reached this stage I had my patient discard the bands. I then propped the teeth apart until the occluding cusps passed each other. (See Fig. 2).

Nature came in and did her work, reducing the angular, protruding chin, and the features are now in perfect harmony ; besides

FIG. 2.



overcoming the threatened trismus, the crowded arch has entirely disappeared.

Having treated the first case, I will now introduce the parallel case, which received entirely different treatment. I would not have dreamed of extracting teeth in this case, and why? Because broad, flat features, depressed lips, and a retreating chin presented themselves for treatment as well as irregular teeth. Patient fourteen years of age. I first used a fixture embracing the two

FIG. 8.

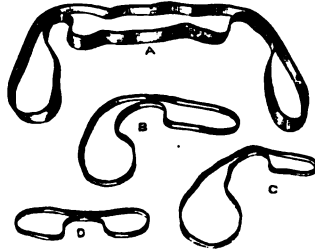


Natural width of arch.

bicuspsids on either side with a continuous band around the front of the cuspidata and behind the incisors. (See Fig. 3.) The object was to crowd the incisors more together and force them forward. Work progressed well to a certain stage, when my patient complained of the soreness being altogether in the bicuspsids. This necessitated another invention.

I at once substituted for the first fixture the following one, which is a simple long strip of gold with the two ends soldered

FIG. 4.



together and woven around the teeth. (See Fig. 4, A.) It was around the first bicuspid on either side, which doubled the strips in a parallel line on the anterior surface of the cuspids; the inner strip was passed behind the incisors and the outer strip was continued on their anterior surface. This simple fixture had a threefold object,—to force the bicuspid outward, to force the incisors forward, and to hold them in line at the same time.

Fixture No. 2 was discarded for two somewhat similar ones. (See Fig. 4, B and C.) The left central being very prominent, I concluded to leave it free; so I placed a small loop around the left lateral, doubling over the cuspid and embracing the first bicuspid on the right side, enclosing lateral and central in the loop. While these two

FIG. 5.



Width after treatment. The gain of nearly one-fourth of an inch was obtained by the spring of the bands alone.

bands were on I found it necessary to weave a band in like manner over the left central, looped from left lateral to right central, which

was to bring the incisors in line. (See Fig. 4, D.) Having brought the incisors in line and spread the superior arch by means of occlusion, inasmuch as the bite was very close, I now go back to first principles and make a retaining fixture, which is formed of a simple band embracing the first bicuspid on either side instead of both bicuspids, with a continuous strip passing in front of cuspids and behind incisors. I am only able to pronounce this case a success from the simplicity, ease, and comfort with which the fixtures were worn, as sheer indifference caused my patient to absent herself on one or two occasions for as long a time as two weeks during the process of straightening her teeth.

By way of summary, I will add that the most important point in this case is the improvement of the features, and because it proves a contradiction of my own statement made in New Orleans. When asked what I would do to gain space to bring the teeth into line, I said in such a case I would have to use the jack-screw or coffin-plate, but here I have spread both arches without the screw or plate, and confined my fixtures to the lower teeth exclusively. The patient would not tolerate the rubbers between her teeth that I put in for assistance, knowing they would give less resistance in occluding if I could gain some by that means, yet she wore the bands without complaining.

SOME PRACTICAL POINTS LEARNED AT SOCIETY MEETINGS AND CLINICS.¹

BY DR. B. A. R. OTTOLENGUI, NEW YORK CITY.

EXPERIENCE is the best teacher. However thorough the college training may be, or become, no man will ever graduate with as much practical knowledge as will come to him by actual work at the chair. If experience, therefore, is a great teacher, and each man is taught by different experiences, it must be a fact that different men learn different methods of accomplishing the same thing, and also learn to do different things. What then can be better than meetings and clinics where these differing methods may be exhibited and discussed? Suppose we read on a programme, "Dr. A—— will fill a tooth with gold;" must we say, "We can learn

¹ Read before the Brooklyn Dental Society, December 25, 1889.

nothing there, we all know how to fill teeth with gold?" That would be a great error. We may learn nothing, but then we may learn something, and that possibility makes it to our advantage, if not our duty, to attend that clinic. It is almost impossible to go into the worst-appointed dental office without seeing something new, or at least different from our own methods. We are all students, and at the same time we are all teachers. We should be willing in both parts.

To-night I have to offer you a brief but practical paper. I think nothing in it is entirely original with myself. I suppose that there is not any idea in it which some of you have not heard before, but I doubt if there is any one who can say, "I knew them all;" and if each man gets but one new idea to-night he will be repaid. These little methods have been extremely valuable to me, and I could not dispense with any one of them.

I will begin with the rubber dam. Probably no dentist will admit that he is not master of so simple a thing as the rubber dam; and yet how often does the dam become the master of the dentist merely because some unforeseen accident occurs in the midst of an operation. There is the tiniest tear through which mucous will ooze; the dam did not pass entirely down between the teeth, and moisture is creeping towards our work; the clamp slips; we have not allowed quite enough margin to the rubber to cover the mouth; we thought we had, but when we applied the clamp we discovered our error, and so on *ad infinitum*; through some little oversight we have failed in that seemingly simple operation the application of the dam. So much annoyance has occurred in this manner that perhaps you will pardon me if I think it important enough to tell you all the little tricks which I have learned in this connection.

For comfortable work, the rubber, when in position, should embrace at least four teeth; on dark days it is not amiss to take in twice as many. It should lay over the face without a wrinkle, and should not cover the nostrils; it should, however, completely cover a moustache, as the hairs often intervene between our eyes and work. To accomplish this a piece of dam of sufficient size should be stretched over the parts which it is intended to cover, so that the proper position for the holes may be ascertained, allowance being made for the stretching which will be made by the clamp. In this position the cusps of the teeth will show through the rubber, and a mark over each may be best made with an excavator, a pencil not answering as well. If because of the loss of a tooth a space must be spanned, the rubber should not be stretched at that

point; if this is not considered it will be found that when the dam is stretched over the teeth it will not hug the necks of the teeth at this point. In fact, this rule holds for all spaces great or small; the rubber should be wide enough. In cutting the holes use a device which makes a perfectly round hole, this being the least likely to tear. Make the holes sufficiently large; don't force a molar through a hole which would be just right for a bicuspid. Where the teeth are in close contact, soap a bit of waxed floss silk and pass it between all the teeth first; then soap the edges of the holes in the dam; in this manner there is seldom any difficulty about forcing the rubber between the teeth. Occasionally, even this will not serve. Your predecessor (of course not yourself) has left a filling with ragged edges, which tear the rubber. In this case the teeth in question should be wedged with soaped wood, as will be described later. The least spreading allows the rubber to pass between, when the wedges may be removed. This is better than trying to force the dam between the teeth with silk. That method not unfrequently tears the rubber, and accounts for the mysterious oozing which occurs whilst the filling is in progress, and is largely responsible for the failure so often reported at the cervical border. If the dam has been properly adjusted, it can be removed in perfect condition. How often have you noticed, after removal, that in addition to the holes made by your punch there are several others, satellites, as it were, about the greater orbs.

Next comes the clamp. In the first place select the one to be used before applying the dam. Choose one which will grip the tooth tightly. Throw away all clamps which would not hurt you if put on your finger. A clamp without a spring is no better than a clock in the same condition. In applying the clamp to a molar in the upper jaw a little trick is found to be most valuable. We begin by slipping the rubber over a central incisor, then over the lateral cuspid and bicuspid, and finally over the first molar, let us say. We endeavor to apply the clamp and find little room, and the patient flinches. The cause is this: The middle finger is the one we use to adjust the dam; it protrudes into the mouth, and as we work towards the molar region we gradually fold the angle of the mouth inward so that at last it is held back by the tip of the finger, and it is difficult to find room for the clamp. Just at this point, take the handle of a burnisher or other instrument and free the check so that the finger passes into the mouth, the check slipping forward; then it will be found that, not being crowded back, its elasticity gives us sufficient room to apply the clamp without

pain. This one point has been of inestimable value to me, and to my patients in saving pain.

Before passing to ligatures there is a special case to be alluded to. Where the gum has receded and a large festooned cavity is present, the space on either side of the hole which is to embrace the tooth to be filled should be wider than ordinarily made; otherwise, when stretched so far up on the gum, there will be leaking about the edges. Ligatures should be dispensed with as much as possible. They are frequently the cause of more pain than any other part of an operation. It is rarely necessary to ligate more than two teeth, and frequently no ligature at all is needed. The trick is done by inverting the edge of the rubber so that it slips under the margin of the gum; if the root is at all conical, the elasticity will cause the rubber to crawl up and tuck itself under nicely. If a ligature must be used, a little cocaine is useful. There will come to us cases where the ligature is absolutely necessary, and where it seems almost impossible to place it so that it will not ride up around the crown rather than remain at the gum margin. Let us suppose such a case in connection with an upper lateral incisor. The cavity is in the palatal sulcus, therefore the ligature must be forced up. The trick is to tie a good knot in your silk first; placed about the tooth, this knot must come at the centre on the palatal side; it makes a good point of resistance for the instrument, and is pressed up under the margin of the gum, carrying the rubber with it; the gum contracting holds it, and when tightly tied on the labial side holds securely. This is the first point I ever picked up at a clinic, and, as I have never seen it at one since, I would have lost a great deal of satisfaction which it has brought me had I been absent from that clinic.

I alluded to leaking. In a very wet mouth, after the best precautions, ligatures well placed, it will sometimes happen that moisture will creep in around the neck of the tooth. Take a piece of spunk, dip it in gum sandarach, being careful not to get an excess, and pack it in a rope around the neck of the offender. Then apply a second ligature which shall tie the spunk in place. The leak will be stopped. If an instrument has slipped and torn a small hole, it may be stopped with a bit of sponge dipped in sandarach. Where the leak is about a clamp, the clamp should be taken off carefully, a fairly large piece of spunk, treated as described, placed along the edge of the rubber, and the clamp reapplied so that it bites the middle of the spunk holding it in place. As to the slipping of a clamp, it sometimes occurs because the dam is held too tight by

the rubber strap which passes around the head, or there is a strain from the dam weights.

In some cases it will be found impossible to apply the dam at all. There is a way of using the napkin which may not have occurred to all. A small mouth napkin is rolled into a narrow fold, and placed about the tooth in the shape of the letter "U," the ends forward. It is so arranged that the folds extend slightly upon the sides of the tooth where it is firmly held in place with a clamp. There is a special clamp made for this purpose by Dr. Ivory, but any clamp of suitable form will answer.

There are a few points about oxyphosphate fillings worthy of note. We have all noticed that what is left on the mixing dish is usually more adherent and harder than what we put into a cavity. Both these facts depend on circumstances which are usually absent in the mouth. To make a dense filling it should be allowed to set thoroughly before the dam is removed, and moisture should be excluded for at least twenty-four hours. This may be accomplished by using a coating of chlora-percha over the finished surface of the filling. If the dam is left on until this varnish has hardened by the evaporation of the chloroform it will not wear off for a week, and I have known it to last two months. Such fillings are comparatively permanent. Where we wish to utilize the sticking or cement quality of this material, the best result is obtained by first lightly coating the surfaces with the liquid. This is why the material is so adherent to the slab. I have thus cemented regulating fixtures to teeth, and at the completion of the work found it troublesome to detach the cement from the enamel after the fixture had been forced off.

In teeth which are sensitive, and where a good general shape to the cavity is present, do not make a retaining pit or groove for starting the filling. I am aware that some of you will say, Never do so under any circumstances. But possibly you preach better than you practise, and you may make such a pit or groove tomorrow if you find it more convenient. In sensitive teeth, whether the pulp be nearly approached or not, a coating of oxyphosphate between the filling and tooth is an advantage; place it there and then press gently two or three pellets of gold into it, without attempting to condense them. When the cement has set, carefully chip away such portions as have crept over the edges, and the gold thus cemented to the tooth forms the very best starting-point. Of course amalgam may be used similarly.

Gilbert's temporary stopping is furnished us in two colors, red

and white. At the first glance it would seem that the white is to be used in the front of the mouth and the red out of sight. The difference in color can be better utilized than that. Use the red to cover arsenic dressings or in any place where immediate continuance of treatment at the next sitting is imperative. Use the white for teeth in a comparatively safe condition. In this manner, as soon as the mouth is examined, the observance of the red filling is as a danger signal, and calls our attention to the fact that there is something which may not be postponed.

A gentleman said at one of our meetings recently, "I have several kinds of separators; I could not get along with only one." I made a mental note at the time that this was odd, because I get along without any. I think the separator is a dangerous instrument. It is in rare cases only, where good and sufficient space may be thus acquired, and in unskilful hands, especially young practitioners, the probability of failure at the cervical border is, in my opinion, increased tenfold. If a tooth is to be filled, the first and most important point is that the completed filling shall be perfect. There are few men who can put in as good a filling in a space barely admitting an instrument, and there are fewer still conscientious enough to do it, even granting them the skill. The best teaching then for the young, and I think for the old as well, is to depend on the rubber or wooden wedge. There is a trick in the application of each. When using rubber allow a bit of it to protrude below the cutting ends of the teeth. This part, by contraction as the teeth move, will swell, and the rubber is prevented from pressing up against the gum. To apply the wooden wedge, proceed thus: The wedge is trimmed to the proper width and should approach a taper very gradually. If it is then made smooth with a bit of sand-paper it will be less likely to split. Lastly, it should be soaped. A second wedge should be made quite thin, and have a shoulder which will prevent it from passing between the teeth beyond that point. This, also soaped, is placed between the teeth next to the gum temporarily. Now, when the permanent wedge is forced into position, this one first placed prevents it from hurting the gum and offers a slippery surface for it to slide against. The wedge in place and trimmed to suit, the temporary slip is removed, and this relief of pressure against the gum is gratefully acknowledged by the patient. At the next sitting, supposing the teeth separated but quite sore, gutta-percha should be placed between them and worn for several days. There is a neat trick about this. If the material is softened it is frequently difficult

to fix it tightly in place. Cut a piece from a sheet and press it into place cold, then smooth and trim into shape with warm burnishers.

Occasionally, in soldering, a portion of our investment breaks off, exposing a part of a tooth. We can ill afford the time to patch the break and wait for the plaster to harden again. The exposed portion of the porcelain may be perfectly protected by covering it with a thick paste of chalk and water. This mixture may also be used to fasten small pieces of gold to the solder-block while soldering.

You all have seen artificial dentures where, after brief wearing, the front blocks separate, the plate finally breaking in half. To avoid this, permanently unite the blocks by soldering a platinum bar to the pins. To do this, after the teeth are ground to proper position, make a guide with plaster along the outer surfaces and then take off the front blocks. They are set into position in this guide, waxed together and invested, when the soldering may be done, the blocks dropping back into proper place.

There is nothing better than the pins from old teeth, soldered to a gold plate, for securing rubber attachments. The graving of a plate or even punching holes is a delusion and a snare. The rubber will separate from the plate some day. The prettiest and strongest plate is made with what we know as "celluloid" teeth, soldered to a gold plate and then rubber vulcanized around them. The plate teeth are not made in as good moulds.

Don't varnish plaster impressions. Soap the surfaces with a shaving brush. Be careful to wash off the suds, or the model will be pitted. Put a little red paint in the water when pouring your model, and in separating, the model is easily detected, by its color, from the impression.

Occasionally a gold plate is brought to us with a tooth broken off, the pins of course remaining in the backing. It may be that a good match cannot be found, or you may be in a hurry, so that you wish the same tooth could be used. Proceed as follows: Boil the tooth in acid to get the stump of the pins remaining as clean as possible. Invest it as for a backing. Lay a bit of pure gold over each broken pin and point a fine flame with the blow-pipe till a tiny gold ball is made on each broken pin. These may be filed up and will be sufficiently long to allow backing the teeth, using platinum foil and gold of a lower carat.

Reports of Society Meetings.

MONTHLY MEETING OF THE AMERICAN ACADEMY OF DENTAL SCIENCE, HELD AT THE BOSTON MEDICAL LIBRARY ASSOCIATION ROOMS, FEBRUARY 5, 1890.

A PAPER on "Advantages of Using Celluloid as a Base for Prosthetic Dentures" was read by Frederick W. Seabury, Providence, R. I., as follows:

MR. PRESIDENT AND GENTLEMEN,—I shall take pleasure this evening in telling you a few of the good points that I know about celluloid dentures; and get in a few clips at our old enemy, ignorance,—politely called conservatism. I have been wrestling with this subject for the past nine years, with varying success. I guess that I have been on top half the time. Why the Celluloid Manufacturing Company, of all people, should have made machines and published instructions which, when used and followed, reduced celluloid to a soft, porous, colorless mass is beyond my comprehension, but that is exactly what they did. A dentist who could discover the few good points on working celluloid which are buried in the thirty-six pages of matter on that subject in Richardson's "Mechanical Dentistry," fourth edition, would have no use for them when found. This observation applies with equal force to dental literature in general.

The amount of reliable data on all subjects connected with dentistry, to be found distributed in fragments and buried in dental journals, books, and essays, will astound any one who will take the trouble to investigate. What dentistry most needs to-day is some one capable of condensing and amalgamating facts already recorded. Celluloid as a base for artificial teeth came into general use about 1871, and in 1876 we replaced the last plates we had made with rubber free of charge. There are a few dentists who have worked celluloid successfully ever since it was introduced, but the large majority of dentists discarded it entirely as soon as

the Goodyear rubber patent expired, in 1881. The advent of the New Mode Heater and celluloid dentures made in it at the American Dental Association meeting, held in Boston August 3, 1880, revived interest in celluloid. Of course I ordered a New Mode Heater, which I received the following spring. I worked a month day and night without producing a celluloid plate. I did make a black rubber plate with celluloid gum. Then I started for New York City to see the inventor, John S. Campbell. He agreed to come to Providence and teach me what he knew about celluloid for one hundred dollars and expenses, which amounted to another hundred dollars. I have four plates here, two black rubber with celluloid gum, and two celluloid. Campbell made one of each, and I made the others at that time; my celluloid plate has the vitreous surface, his was polished. I then worked a month before I produced another perfect celluloid plate, after that the percentage of perfect plates increased steadily.

I have labored constantly to reduce the process to a mechanical certainty for every dentist who may wish to work celluloid, and I believe that I have succeeded. The greatest difficulty has been to discover the length of time required to heat the plaster investment up to 315° F. I probably burned and exploded one hundred celluloid blanks, and invested one hundred days' work before that was accomplished. I invented the inclined guide-pin to obviate the breaking of the plaster investment, over the projecting alveolar ridge in front, when opening the flask and when moulding. I made a flask with removable guide-pins to supply the need of a lateral movement which was found necessary when opening the flask. The dovetail lock was invented because plates were liable to burn or become porous if left in the heater after moulding. I journeyed to Philadelphia to inquire if the form of the celluloid blanks could be changed to resemble dental plates and the color varied. The S. S. White Dental Manufacturing Company, which desired the change as much as I did, gave me a letter of introduction to the president of the Celluloid Manufacturing Company, upon whom I waited in Newark, N. J. He told me that the plates could be made any and every shape and color desired, but as they had one hundred thousand plates on hand they did not intend to make any more. I then visited the Zylonite Company, in New York City. I was cordially received, and they regretted very much that we had not met before, for they had hired the same bungling dentist whom the Celluloid Company had employed, and of course they had a large stock of Zylonite blanks which they could not sell. Blanks such as I

wanted could be made with one-half of the material, and they felt badly when they realized the mistake they had made.

Nearly all of the failures to make celluloid dentures can be attributed to the form of the blanks. The size, shape, and unequal absorption of the alveolar process, in nearly all cases, centres the whole pressure, when closing the flasks, on the teeth where least material is required, thereby cracking the teeth and investment. Celluloid is so unyielding that the blank before moulding must be formed so as to exert an equal pressure on each tooth at the same time. As no outlet can be made for the surplus celluloid in the centre or roof of the plate, blanks must be reduced to the thickness required by the denture when finished, otherwise the flask cannot be closed. I now first mould an exact duplicate of the plate desired, so when moulding the second time with the teeth in place the pressure will be equally distributed.

The next point is the amount of pressure required to produce a dense tough plate. After locking the flask, remove it from the press as quickly as possible and place it in a large bench vice, close as tight as possible, and leave it there to become cold. You can easily understand that I was not long in crushing a half-bushel of cast-iron flasks; then I experimented with malleable-iron flasks to the tune of four hundred dollars,—they proved unsatisfactory; brass was too soft, bell metal too hard and brittle. My flasks are now made of bronze a little softer than bell metal.

To make a perfect plate requires a perfect flask. The vitreous surface is dependent on a temperature of not less than 300° when moulding, and contact of the celluloid with metal at that time. The artistic possibilities of celluloid and plain teeth are too evident to need comment.

The advantages of celluloid as a base plate are:

1. The part of the plate covering the hard palate is $\frac{1}{8}$ of an inch or less thick, and the labial portion only thick enough to restore the contour of the face, which with plain teeth makes probably the lightest denture in use.

2. It is tough and rigid. I have never seen a broken plate.

3. The vitreous surface protects the plate from the fluids of the mouth, so they are cleaner even than continuous-gum work.

4. Practically the perfect fit of the celluloid plate counterbalances the conductivity of metal plate so far as inflammation is concerned.

5. In color the carved stippled surface, after the tin-foil is

stripped off, resembles mucous membrane more than any material now in use.

6. They are easily adjusted to fit inflamed tissues by dipping in boiling water.

7. It is easily repaired without changing the fit.

8. Celluloid moulded by dry heat does not deteriorate or change color.

DISCUSSION.

President Seabury.—The subject is now open for discussion.

Dr. Ham.—Mr. President, I cannot say that I have investigated this matter, or proved it so thoroughly as Dr. Seabury, as I have not given it the time nor spent the money on it that he has, but I can say that I have used celluloid since 1871, and have prepared my cases in both ways,—with the metal dies and by the old method. I think that the method of making it between the metal dies is very much preferable to the old method, as it produces much better results. The old method in many instances left the case somewhat porous, and it would absorb moisture and discolor. But taking it all in all, in the use of both methods, I have never had to make over any more plates with celluloid than I have with rubber, and those plates that I have seen in after years look very well. I first begun to use celluloid in temporary cases, but I found that my patients never came back. I never got any permanent work to do, for the celluloid worked so well that they had no desire to change. I have a patient who is wearing a temporary celluloid plate which I made in 1871, and five or six years ago, while I was doing some other work, the patient was talking of having a permanent set, but I have not had the opportunity to make it yet. It makes a very durable and light denture, and I think second to none when taking into consideration its cost and the artistic result that can be produced in all cases. You can make just as thin a plate over the gum as you choose, and still it will look very natural and it will be very tough and very durable. Now, in order to produce the same effect with block teeth it would be necessary to grind them so much that they would be very thin and fragile. There is another thing I consider of very great value, and that is, the adaptability of the material to the mouth.

I never have to depress the arch of the plate to make it fit the roof of the mouth, as I have frequently to do with rubber. Celluloid, if exposed to a dry atmosphere, will warp when made in the old way, but with the new process the tendency to come together does

not follow; the plate will remain very much as when taken from the metal die no matter how long the exposure, and I have brought here to-night a case which was made for a patient six months ago. The arch was high and it was very hard to remove the case from the die. I do not know whether these three front teeth were broken in removing the plate from the die or not, and my workman did not know, but they were broken off in some way, and so the case was worthless, and I thought I would bring it here, it being a good one to illustrate this matter. You can see that it was a difficult case, on account of the overhanging of the mouth. The plate has been off the die now since it was made, though I have put it on there once to test it. The case was a difficult one to handle, and it would be considered such were it a gold plate, but when I replaced it upon the die it fitted as perfectly as the day it was made, and I think it would now go into the patient's mouth without any trouble. And then the color; even if it does not retain it for any great length of time, it cannot be gainsaid that it is superior to rubber in this respect, as it is certainly very flesh-like. I am not able to compare it with the continuous-gum work, as I have never used any in my practice. My experience in repairing it deterred me from ever introducing it in my practice.

The color of celluloid is good, the texture is not as dense as rubber, but it is fibrous and exceedingly tough. I remember a partial case of about six teeth, scattered around in various portions of the mouth, which for some reason did not answer. I have repeatedly put my whole weight on that partial set without breaking the plate. I think if I have done so once, I have done so a hundred times. I did finally succeed in bending it with about two hundred pounds pressure.

And then the artistic effect that can be produced with this material, I think, is a very desirable point. The teeth can be arranged to your liking, with the assurance that a satisfactory result will follow in the completed plate. If you employ blocks, the arrangement is too regular,—too mechanical, the teeth are too nice. I could not with carved blocks seem to adapt each case to the individual, but now with these celluloid plates, and being able to use the plain teeth, it is a very easy matter to move a tooth in any direction, and you may be sure it will be just where you placed it, if everything is well done in the laboratory.

Now, there is another point. Dr. Seabury tells me that he does not stipple the gum, because the smooth surface can be kept cleaner and neater than the stippled gum. I have seen but very few of

them, however, but what looked as good as new and had nothing upon them but what could be easily removed with a common tooth-brush, a little prepared chalk, or something of that kind.

On the whole, I am persuaded that celluloid is about as good a material as we have to use in our laboratories.

Dr. Eddy.—I have used celluloid for some years, and, being a competitor of Dr. Seabury, I have had opportunity to see a great many celluloid plates which he has made, and I know what he has said is true. But plates made by the old method, not having a vitrified surface, do not hold their color, and are not as durable as those made by Dr. Seabury.

Dr. Chandler.—I would like to ask Dr. Seabury if he uses a metal die or a hardened plaster cast?

Dr. Seabury.—A metal die, always.

Dr. Fillebrown.—What metal do you use?

Dr. Seabury.—I use tin mostly.

Dr. Chandler.—Did you find any trouble in the use of tin in filling the mould? You cannot make a sharp casting with it.

Dr. Seabury.—I have not experienced any trouble of that kind. We mould them in sand the same as we do zinc.

Dr. Fillebrown.—I have been much impressed with the remarks of Dr. Seabury, and am much more interested in the subject than I expected to be. The excellence of the work shown here is very marked. I used celluloid considerably in former years, but returned to the use of rubber, as that seemed to serve me better. I used tin dies for the palatal and lingual surfaces of the plates and got a very fine hard finish, but I did not coat the labial gum surface with tin as has since been done, and probably that was the great reason why I laid celluloid aside. There is one other point brought out in this discussion worthy of consideration,—that is, the merits of plain teeth over gum sections for artificial substitutes for natural teeth. I consider them very much superior in every way. For nearly twenty years I have used scarcely a set of gum teeth unless by command of my patient. I agree with Dr. Ham that plain teeth are best because more easily arranged in the mouth according to the artistic requirements of the case. Or, to state it stronger, plain teeth can be arranged artistically, while gum teeth cannot, but must submit to predestined rigidity. As each plain tooth can be moved separately, the personality of the patient will assert itself, and an individuality will be obtained not possible with gum sections. At one time I was in the habit of carving models for teeth in wax, arranging them in the mouth and having gum

sets carved for cases. But though the carved sets were far better than the moulded gum sections, they all came back with a monotonous sameness, very objectionable. The plain teeth with pink rubber for gum afford myself and my patients great satisfaction. By using teeth a little longer than natural, but not enough so as to be noticeable, the gum will show but little if any, and the case will look a thousand times better than if made with the rigid sets of gum teeth.

Dr. Banfield.—Mr. President, I had occasion to make a set of teeth a few days ago where the upper jaw was very prominent, and finding that if gum teeth were used the lip would be thrown too far out, I decided to use celluloid made by the Seabury process. It was particularly advantageous to use celluloid in this case, because the labial surface of the plate required to be very thin, and the use of celluloid assisted in arranging the teeth to look more natural. When the plate was finished the material looked good and firm and I was well pleased with it.

Dr. Codman.—I would like to ask Dr. Seabury what blanks he uses?

Dr. Seabury.—They are all White's.

Dr. Ham.—If you remember, soon after the introduction of this material, the works of the Celluloid Company were destroyed by fire, and the stock they had on hand was either burned up or ruined. Then there was quite a demand for it, and the company was induced to immediately enter upon the manufacture of it again, and the consequence was they placed upon the market a material that had not been thoroughly seasoned. What we are getting now is very much better.

Dr. Williams.—I wish to ask Dr. Seabury in regard to the non-warping qualities,—whether it is liable to warp?

Dr. Seabury.—This set of teeth has been lying on the bench and has been exhibited for nine years. There has been no shrinkage or warping. They are moulded at such a high degree of heat, 315° F., that the tendency to warp is overcome.

Dr. Andrews.—I would like to ask Dr. Seabury if the blanks are any better now than they were before in regard to the shape?

Dr. Seabury.—They have not been changed. Celluloid has almost gone out of use nowadays, and they had such a large stock of blanks left on their hands that they refused to make new dies. They realized that they were two or three times as thick as they need to have been, and of course it would have been a great saving to them if they had been made the right thickness. As they are, they have to be scraped to the required thickness.

Dr. Fillebrown.—Do you make new moulds each time?

Dr. Seabury.—We mould a plate every time. First scrape the roof,—scrape it down to the thickness you want it,—then mould it, and then it is ready to put the teeth on, all of which could have been avoided if the blanks had been made the right shape.

Dr. Banfield.—There was one thing which I wanted to ask Dr. Seabury, and that is, if he had seen any plates that had been worn for a year or two and then laid aside?

Dr. F. N. Seabury.—I can answer that question. About a year or so ago a lady came to our office who had been wearing a celluloid plate for five or six years. The plate was all right in every respect, but she wanted to have a gold one made. We have that plate now, and it is just as perfect as it was then.

Dr. Banfield.—Have you ever tried it in the mouth?

Dr. F. N. Seabury.—We have never had the opportunity, but Dr. Ham's demonstration is pretty conclusive on that matter. I think it does not change.

Dr. Baker.—I should like to ask Dr. Seabury if he has ever had any difficulty in removing the plate from the metal die?

Dr. Seabury.—No, sir. You can do that every time by immersing the plate with the tin die in a basin of cold water; then hold the basin over a gas-burner, and the flame striking the bottom of the basin will heat the die; before the water boils, the plate can be easily removed. In this machine (the Seabury celluloid machine) a celluloid press and heater are reduced to the simplest form. The advantage of this little press is that the operator has perfect control of the case through each stage of the process. I can tell by touching my finger to the tin die how hot the plaster is. It is the heat from the plaster that moulds the celluloid. The flask should be put in bottom side up, turn the gas on, and leave it in there an hour and a quarter at a temperature of 320° F. Then mould. The flask will close in from four to five minutes. Then remove it from the press as soon as possible, so that it will not burn or become porous. This can be done very readily. The flask when it is heated up to that degree of heat is pretty hard to handle, but the door is large enough so that you can get the flask in and out quickly without burning yourself. I have not had an imperfect case since I have used the heater. I am more sure of the product than I would be with rubber.

Dr. Baker.—Do you use the metal always?

Dr. Seabury.—The metal must come in contact with the celluloid or you don't get a finished surface. You get the same effect

by covering your plaster with tin foil. The only way you can tell how hot your investment is, is by the hiss of the tin die.

Dr. Chandler.—Tin is a very soft metal, and when it is heated to something like 300°, it will take the impression of almost anything. In the manufacture of vulcanite plates, it will take every impression of the mould.

Dr. Seabury.—I have never seen more than one or two softened in nine years. In the case of a very narrow alveolar ridge, I would not trust the tin, I would use bronze.

Dr. Fillebrown.—How would Babbitt metal do?

Dr. Seabury.—I don't know. I have never used it.

Dr. Fillebrown.—I think that Babbitt metal melts at a lower degree than tin.

Dr. Chandler.—Oh, no; between tin and zinc.

Dr. Williams.—I would like to ask Dr. Seabury why he does not use zinc?

Dr. Seabury.—I do use it occasionally, but it is more apt to shrink. We mould these tin dies very thin, and it is hard work to get a suitable mould from zinc. The shrinkage takes place right in the centre of the roof and you get a hole there.

Dr. Fillebrown.—I would like to ask if there is considerable celluloid used?

Dr. Seabury.—I should judge there were about half a dozen dentists who use it in New England, but I should say that in comparison with the number of dentists in the United States they do not make much of a showing.

Subject passed.

President Seabury.—Dr. William Y. Allen will present a new method of obtunding sensitive dentine.

Dr. Cooke.—Mr. President, Dr. Allen was not able to be here to-night, so he left the machine at my office, and I will endeavor to tell you all I know about it.

I understand, Mr. President, that this appliance is not new to Providence dentists. It has been used there for some time, and it consists of three parts,—a little alcohol lamp, a little boiler in which steam is generated, either from water or alcohol, and a little tube, about ten inches long, to convey the steam to the desired point. The amount of the steam is regulated by a stopcock. I tried the device on a brother dentist with pretty fair success. Also upon another case in which the secretions were in a very acid condition, and where I had had some difficulty in excavating. I started this

flame,—the steam gets up in a few moments,—and, carrying this tube into the cavity, and allowing it to remain there a few seconds, I took an excavator and cut the decay out without pain.

I presume, Mr. President, that some of the Providence gentlemen can tell more about it than I can.

Dr. Eddy.—I suggest that Dr. Cooke light the lamp. All I know about it is that it was invented by a gentleman by the name of Small, and a dentist of the same name has been using it since last February. Dr. Cummings, I know, has personally used it.

Dr. Cooke.—This is alcohol in the boiler here. When first used I believe they put in water.

Dr. Williams.—Do you suppose that alcohol is better than water?

Dr. Cooke.—Yes; steam can be produced at a lower degree of temperature.

Dr. Fillebrown.—I would like to ask Dr. Eddy if he has seen any cases in which the use of it has been injurious?

Dr. Eddy.—Not at all. I have talked with one of Dr. Small's patients,—an intelligent gentleman, who has a very sensitive organism. He was very enthusiastic; having had buccal cavities filled with little discomfort, when formerly the pain was unbearable.

Dr. Potter.—What is the temperature of the steam?

Dr. Chandler.—If water is used, the boiling point would be 212° F.; if alcohol, about 174° F.

Dr. Potter.—What would be the effect if the hot steam were to come in contact with the pulp of the tooth?

Dr. Eddy.—Mr. Lippitt, the gentleman who spoke to me about it said that it could be put right onto an exposed pulp without any discomfort.

Dr. Pond.—Have you got to put the point of the tube right onto the dentine?

Dr. Cooke.—I understand it has got to be very close.

Dr. Williams.—Is the operation done while the tube is in the cavity, or immediately after?

Dr. Cooke.—You hold it there fifteen or twenty seconds, remove it, and commence excavating.

Dr. Taft.—I would like to ask Dr. Cooke if he considered it worked successfully on the two patients at the meeting of the Harvard Odontological Society?

Dr. Cooke.—In those cases the success was not marked, but that proves nothing. Clinics are not always successful.

Dr. Fillebrown.—I would like to ask Dr. Eddy, or some one who

has had experience, if he thinks the sensitiveness is obtunded by the resorption of the moisture from the tubules of the teeth?

Dr. Eddy.—I would say, Mr. President, that I have had no experience whatever. Dr. Cooke has used it personally and can tell you more about it than I.

Dr. Cooke.—I should hardly think it was caused by the resorption of moisture, as, after using the steam, we must dry out the moisture which is condensed in the cavity before excavating. This is not so when alcohol is used.

Dr. Niles.—I want to say a word in regard to this steam obtundent. It was called to my attention a month or six weeks ago, and from my knowledge of its use in Dr. Allen's hands and my own experience with it, I am inclined to think there is some merit in it. I had yesterday a very good chance to test it, and I sent to Dr. Allen's office and obtained the use of it. The case in hand was the fracture of a superior central incisor of a young lad about twelve years of age. The tooth was broken about one-third the way up, and, in order to piece it with porcelain, it was necessary to smooth down considerable of the dentine. I used the steam and it certainly worked very well indeed. I found that after grinding off a little dentine, it was necessary to apply it again, and so by alternately grinding and applying the obtundent I was enabled to complete the operation, giving the patient little pain. In that operation it was certainly successful, and I for one do not feel like passing this matter over so lightly.

Dr. Eddy.—Dr. Allen has used it a great deal, and says that his patients would not think of having an operation performed without it.

Dr. Fillebrown.—The principle is good and there is no doubt it can be improved on. The boiler can be made to throw medicated solutions for various purposes, as is now done by the steam atomizer in throat diseases.

Dr. Cooke.—Dr. Allen made a step in advance by using alcohol instead of water.

Dr. Taft.—Isn't it liable to destroy the pulp?

Dr. Cooke.—It struck me in rather a ridiculous light when I first saw the machine, as it seemed as if it would surely cook the pulp, but by judicious use I do not believe this objection will be a serious one.

Dr. Taft.—How much of the tooth does it affect?

Dr. Cooke.—I find that two thicknesses of common note paper is about the depth that the dentine is obtunded.

Dr. Fillebrown.—I should say that if it was obtunded half the thickness of one sheet of note paper, it was a perfect success.

Dr. Baker.—I think myself this thing is worth investigating if nothing more, and I for one would like to try it. My attention has been called to it several times lately through my patients; if it has merit we have got to have it; if it has not, it will die a natural death.

Dr. Codman.—I saw the explosion here this evening, and I would not have such a thing as that happen in my office for five hundred dollars. I don't think any dentist here would. We all know how unwisely people will act when they come into a dentist's office,—how they will do the most extraordinary and unexpected things, and how careful we have to be so as not to shake their confidence in us. I do not see the necessity of having the lamp placed near the patient's mouth, for accidents in its use would be fatal to the confidence of our patients.

Dr. Niles.—I think Dr. Fillebrown is in a position—being at the school—to make a thorough test of this apparatus, and I am sure the inventor will be very glad to loan one to the Academy for the purpose of investigation. It seems to be a risky thing to be experimenting with in ordinary practice until we have had some instruction in the use of it from some one who has had experience, and in the clinic there are plenty of exposed pulps and opportunities for experimenting that we would not have in our offices.

Dr. Banfield.—I will ask one question which I think might be very interesting, if those gentlemen who have used it can answer it, and that is, if they have themselves, or any one else, tried to destroy a pulp that they wished to remove, with this instrument.

Dr. Eddy.—I have never heard it spoken of as used for that purpose.

Subject passed.

Dr. Banfield.—The S. S. White Dental Manufacturing Company have kindly sent me their Howe Fissure Chisels to be exhibited to the society. Also, the Perry Dental Engine, which you will please examine.

Dr. Ham.—If there is no other business to come before the society, and the exhibition of dental appliances is now in order, Mr. President, I would like to exhibit a method of adjusting a rubber ligature to a regulating case. I have never seen it used by any one else, and I think it is original,—still it may be very old. Most of us are accustomed to using buttons, hooks, etc. I simply

make a hole of proper size through the rubber plate, and on the palatal surface I countersink with a square ended bur. I then take a silk string and pass it through the loop and pull the end of the rubber ring through the rubber plate, and the resilience of the rubber will fill the countersink in the plate and hold the ligature firmly, I then clip the string off even with the plate and leave it in the loop.

WILLIAM H. POTTER, D.M.D., *Editor,*
American Academy of Dental Science.

SEVENTH ANNUAL SESSION OF THE MARYLAND STATE DENTAL ASSOCIATION.

(Continued from page 229.)

THE annual session was held on December 5 and 6, 1889, at the St. James Hotel, Baltimore, the president, E. P. Keech, M.D., D.D.S., in the chair.

Friday, December 6, 1889.—Afternoon Session.

Report from Committee on Anatomy, Physiology, and Histology, consisting of Drs. R. B. Winder, *chairman*, Richard Grady, and W. H. Montell.

Dr. R. B. Winder.—As chairman of the committee of the Section on Physiology, Surgery, Histology, and Microscopy, I will have to report that, by some means or other, the impression was made on our minds that anatomy was included and placed at the head of the list of subjects for our consideration. So it was thought wise to commence with this fundamental branch of all medical studies, and offer a paper, this year, on anatomy as a starting-point, to be followed next year by one on physiology; the year after, by one on surgery; and later still, by one on histology and microscopy. We beg leave to apologize for our misconceptions, but, in all due deference, would suggest that anatomy properly belongs to this section, and should be added thereto. At the committee meeting a general plan of dealing with this subject was agreed upon, and Dr. Richard Grady generously consented to work up the matter, and present what your committee have to report, and to him belongs the credit of preparing this essay, which to him, no doubt, has been a very laborious pleasure. We sincerely hope that his efforts will be duly appreciated.

Richard Grady, M.D., D.D.S., then read the following paper on Anatomy.

The Committee on Anatomy, Physiology, and Histology, as now constituted, in order to fill an important gap which has existed since the Association was founded, has confided to me the difficult task of preparing the report for this year, it being understood that the other members will, if reappointed, severally speak on Physiology and Histology at future meetings. A twenty-minute paper on anatomy must of necessity be rigidly eclectic, when many volumes are given to its full exposition. I have intentionally abstained from burdening the text with references, and have freely used the works at my command; in some cases paraphrasing, or even adopting *verbatim*, the author's language, when it suited my purpose.

The dental organs, through the digestive function, hold an important relation to the whole body. Dentistry, therefore, includes the sciences which lie at the foundation of all medical art. The anatomy, physiology, and pathology of dentistry should, therefore, differ in no respect from that of medicine; in fact, human anatomy is a distinct branch of study in connection with physiology, pathology, surgery, and therapeutics; and a dentist's knowledge of these fundamental sciences admits of no limitation; in most cases his knowledge is insufficient to give full value to the subsequent lessons of experience.

During the primitive ages of the world anatomy, which is now one of the most important branches of natural science, was little cultivated as a science, and hence the art of surgery was undeveloped. The ancients, ignorant alike of the anatomy and diseases of the human body, supposed that manual dexterity was all that the surgeon required; and the well-known etymology of the word *surgery*—"hand-work"—conveys that idea. In our own day, in our own city, a like sentiment has been expressed, it being claimed that dentistry is ninety-nine and a half per cent. mechanical. The surgeon, during the last half of the century, has not been considered inferior to the physician. He must be his equal in medicine to become eminent; and besides possessing a knowledge of anatomy, the M.D., for his major operations, and the D.D.S., for his minor operations, should have, to use the language of Celsus, "a hand steady, expert, and never tremulous, and an intrepid mind." To guide them in their delicate and difficult operations, a proper knowledge of the relations of organs to each other, such as the positions, forms, dimensions, structure, and peculiari-

ties of nerves, vessels, muscles, glands, and membranes is necessary. They must know *where to cut* and *what to avoid* in operating on the living body, for the life of the patient might be jeopardized if they were not well acquainted with the anatomy of the vital organs.

It is difficult to determine the date at which the science of anatomy began to be cultivated. It is probable, says Galen, that *Æsculapius*, who excelled in the treatment of wounds, dissected animals for the instruction of his pupils. Although among the Jews the touching of a dead body involved ceremonial uncleanness, they did not entirely neglect anatomy.¹ They counted two hundred and forty-eight bones and three hundred and sixty-five veins and ligaments, which division, it is said, has relation to the two hundred and forty-eight precepts of the Mosaic law that *command* and the three hundred and sixty-five that *forbid*. Hippocrates was the first author who treated anatomy as a science. He caused a skeleton of brass to be cast, which he consecrated to the Delphian Apollo, with a view of transmitting to posterity proofs of the progress he had made and stimulating others to the study of anatomy. Aristotle possessed nothing certain on the subject beyond what could be drawn from the probable resemblance of the corresponding parts of other animals. He first gave the name *aorta* to the great artery. Human bodies were first dissected B.C. 300, and it is said that some condemned to death were dissected while they were still alive. Galen (A.D. 131) dissected apes, as being most like human subjects, though he occasionally obtained bodies of children exposed in the fields, or of persons found murdered, which, how-

¹ 1. That the Jews paid attention to anatomy is shown by the fact that Hebrew possesses names for all the organs and their parts. Cf. "Das Arabische und Hebräische in der Anatomie," Von Dr. Joseph Hyrtl, Emeritus Professor of Anatomy at the University of Vienna (Vienna, 1879). 2. There is recorded in the Talmud a case of dissection. In "Bechoroth," 45, a, it is related that a certain disreputable woman was condemned to be burned, but that her body was given to the pupils of Rabbi Ishmael, who discovered that a woman's body contains two hundred and fifty-two, and not two hundred and forty-eight, bones. 3. The ancient Jews had simple and effective remedies for diseases, which contrasted strongly with the almost universal use of magical formulæ employed by other nations. Cf. Dr. Joseph Bergel, "Die Medizin der Talmudisten nebst einer Anhang die Anthropologie der alten Hebräer" (Leipsic, 1885). 4. The sanitary regulations concerning the food drew the attention of the Hebrews to anatomy. Thus a cow must not only be slaughtered according to certain regulations, but its lungs must afterwards be examined, and if any trace of pleuro-pneumonia be found, the flesh of the animal was considered unfit to be eaten.

ever, he was obliged to dissect in secret. There was at this time no regularly prepared skeleton, as there was a Roman law forbidding the use of dead bodies. Galen also collected the works of his predecessors. He first showed that arteries in the living animal contain blood, not air alone; but it did not occur to him to notice the circulatory movement of the blood; that was reserved for Harvey fifteen centuries later. As you know, the ancients supposed the arteries to contain "spirits" or air, because, when cut open in the dead body, these vessels do not collapse, as a vein would, but stand open, allowing the air to pass in. It was this circumstance which led the old anatomists to believe that the arteries also contained air during life.

Anatomy made small progress among the Arabs, which is accounted for by the Mohammedan religion prohibiting contact with dead bodies; but the Arabians cultivated the natural sciences in the Middle Ages when they were neglected by the Christians. When a great Arabian physician (Rhazes, 852) was about to be operated on for cataract, he discovered that the surgeon was ignorant of the structure of the eye, and refused to submit to the operation.

Anatomy was now neglected for a long period, till the King of Sicily, in the thirteenth century made a law forbidding any one to practise surgery without having first acquired some knowledge of anatomy. He founded a chair, at the solicitation of his chief physician, where the science was demonstrated for five years. Students from all parts crowded to it, and some time after a similar school was established at Bologna, where one of the surgeons (Vigo) boasted of having dissected more than one hundred subjects. Reports were circulated that he had dissected living Spaniards, and he fled or was exiled. Another surgeon (Vesalius, 1514) had the misfortune to open the body of a young Spanish nobleman whose heart was found beating, and he was obliged to make a pilgrimage to Jerusalem. The first work in English on anatomy was published in 1548.

In the seventeenth century progress was rapid. Harvey, in 1619, discovered the circulation of the blood, and the microscope was employed to detect the structure of minute vessels. In 1622 the existence of lymph-vessels was discovered and demonstrated. The glandular vessels were investigated by Wharton, while Malpighii and (in the following century) the illustrious Ruyseh, by the use of injections and the aid of the microscope, gave a new impulse to the research in minute structures. Eminent names in the history of anatomy are numerous in the eighteenth century. We find them

in Italy, which still retained its former pre-eminence; in France, including Bichat, the founder of general anatomy; in Germany, Haller and Meckel prepared the way for greater achievements in the nineteenth century; in Great Britain, Hunter and Charles Bell contributed to the progress of the science. On the boundaries of the two centuries we find names nearly all connected with practical medicine, which was benefited by the studies in anatomy. Many of the great discoveries of comparative anatomy and general anatomy have been made in the present age; and the systematic study and development of minute anatomy dates from the improved construction of the compound microscope. The necessity of a union of theory and practice has led to the zealous study of pathological anatomy by modern scholars. Eminent contributors to comparative anatomy are familiar to you, as are also the names of those who have studied it with especial reference to physiology. First Italy, then Holland, Denmark, Sweden, Germany, France, England, and America have furnished them, but popular prejudices have hindered free dissection of human bodies in medical schools until a very recent date.

The word "anatomy" is still commonly used to signify "human anatomy." Almost all begin the study of the science as medical and dental students with the dissection of the human body, *and most end there*; but no special anatomy can be rightly and fully understood save on the basis of general science, of which it is an integral part. The reason lies in the diversities of organic structure being subordinated to a principle of unity.

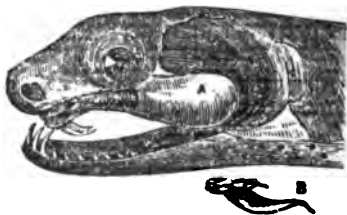
Without some knowledge of comparative anatomy it is impossible to understand the beautifully progressive development of organization. It is necessary even for the full comprehension of the uses of many parts of the human body, which, apparently rudimentary and useless in man, are highly developed in other animals. This science is also the basis of physiology and the natural classification of animals. On a subject so vast as this, comprehending the whole range of animal life, it will be impossible here to give anything but the briefest sketch, making it referable to the organs of alimentation and digestion, and especially to the teeth.

In man the upper jaw-bones contain all the upper teeth; but in the lower animals the incisors are contained in the intermaxillary, a persistence of separation which may be detected in the human foetus. No animal but man has a chin. In all below him the interior arch of the lower jaw is convex vertically and retreating at its lower margin.

The range of the subject of dental anatomy turns upon the meaning which is attached to the word "tooth." Most vertebrates and a great many invertebrates have certain hard masses in or near to the orifice of the alimentary canal,—i.e., the mouth. By these hard masses, sometimes of bony and sometimes of horny nature, various offices in connection with the prehension and comminution of food are performed, and to them the term "teeth" is applied. In many animals teeth have come to be used for other purposes, such as for sexual warfare; but it can hardly be doubted that teeth have primarily to do with the nourishment of their possessor. No one can doubt, whether from the comparison of adult forms, or from a study of the development of the parts, that the teeth of the shark correspond to the teeth of other fish, and these again to those of reptiles and mammals. It may be clearly demonstrated that the teeth of the shark are nothing more than highly-developed spines of the skin, and therefore it is inferred that all teeth bear a similar relation to the skin. This is what is meant when teeth are called "dermal appendages," and are said to be perfectly distinct from the internal bony skeleton of the animal. The teeth of the shark, and of many other creatures, remain embedded in tough, mucous membrane, and never acquire any connection with the bone. Indeed, all teeth are developed from a part of the mucous membrane, and any connection which they may ultimately get with the bone is a secondary matter. It has been well expressed by Dr. Harrison Allen, in his "Anatomy of the Facial Region," that "if the hairs of the scalp were to be inserted into the skull, or of the moustache into the upper jaw, we should express great astonishment, yet such an extreme proposition is no more remarkable than what is seen to take place in the jaws." Again, "the feathers of certain birds making impressions on the radius, the whalebone pendent from the roof of the mouth, are examples of this same association of tegumentary appendages with the bones." In their simpler forms, then, the teeth are met with as very numerous spines. In many fish the teeth, though more specialized, are scattered over almost every one of the numerous bones which form part of the walls of the mouth and pharynx; in reptiles they are much more limited in position, and in mammals are absolutely confined to the intermaxillary, superior maxillary, and lower maxillary bones. In fish and reptiles it is the exception for the teeth in different parts of the mouth to differ markedly from each other; in mammals it is the rule.

There is no organ so characteristic of the animal, as distin-

guished from the vegetable, as an internal digestive cavity for the conversion of organic substances into nutritive material. In the sac-like polyps (*e.g.*, the animals that form coral) the food is introduced into the simple stomach and dissolved without any mechanical division; in the higher invertebrates, and all the vertebrates, there is a distinct mouth, an apparatus for mastication, a stomach for digestion, and an intestine from which the nutrient matters are absorbed and the useless materials are expelled. In vertebrates the teeth are confined to the cavity of the mouth, and generally to the jaws, none being found in the stomach. In serpents, which feed on living prey, the sharp, conical teeth are directed backward and the bones to which they are attached are freely movable, enabling them to swallow animals considerably larger than themselves; the venomous class have in the front of the upper jaw two (Professor Winder has seen more) long, curved fangs, communicating by a canal or a groove with the poison-gland behind and below the orbit; the muscles which close the jaws press the venom into the wound made by the teeth; in the rattlesnake these fangs are movable, and may be bent backward in a fold of the gum when not in use; behind the ones actually employed, there are rudiments of others which soon complete the terrible armature, if one fang happens to get broken.¹



HEAD OF THE COBRA.

A. The poison-bag. B. A fang, removed.

The bill furnishes to the zoölogist as good characters for the classification of birds as do the teeth for that of mammals; its exterior and the sharp edges are covered with solid horn, but it never has any true teeth, so that there is no proper mastication in this class.

¹ The cut affords a view of the poison-gland, and the backward position of the fangs. The instant the wound is inflicted, the roots of the fangs press behind on the venom-bag, causing the fluid to run down a groove or channel in each fang, by which means the *virus* is carried directly into the punctures made.

The existing kinds of vertebrates constitute part only, perhaps but a small proportion, of those which have lived. More than one-half the groups of the class indicated by osteal and dental characters have perished; and it is only by petrified faeces or casts of the intestinal canal, by casts of the brain-case, or by correlative deductions from characters of the petrified remains, that we are enabled to gain any glimpses of the anatomical conditions of the soft parts of such extinct species: by such light some of the perishable structures of these animals are indicated in works of comparative anatomy.

As vertebrates rise in the scale, and the adaptive principle predominates, the law of correlation, as enunciated by Cuvier, becomes more operative. In the jaws of the lion, for example, there are large canines, formed to pierce, lacerate, and retain its prey. There are also compressed, trenchant, flesh-cutting teeth which play upon each other like scissor-blades in the movement of the lower upon the upper jaw. The lower jaw is short and strong; it articulates with the skull by a condyle received into a corresponding concavity, forming a close-fitting joint which gives a firm attachment to the jaw, but almost restricts it to the movements of opening and closing the mouth.

The jaw of the carnivora develops a plate of bone of breadth and height adequate for the implantation of muscles with power to inflict a deadly bite. These muscles require a large extent of surface for their origin from the cranium with concomitant strength and curvature of the zygomatic arch, and are associated with a strong, occipital crest and lofty dorsal spines for vigorous uplifting and retraction of the head when the prey has been gripped. The limbs are armed with short claws and endued with the requisite power, extent, and freedom of motion for the wielding of these weapons. These and other structures of the highly-organized carnivora are so co-ordinated as to justify Cuvier in asserting that the "form of a tooth gives that of the condyle, of the bladebone, and of the claws, just as the equation of a curve evolves all its properties; and exactly as, in taking each property by itself as the base of a particular equation, one discovers both the ordinary equation and all its properties, so the claw, the bladebone, the condyle, and all the other bones individually give the teeth or are given, thereby reciprocally; and in commencing by any of these, whoever possesses rationally the laws of the organic economy will be able to reconstruct the entire animal. The law of correlation receives as striking illustrations from the structures of the herbiv-

orous mammal. A limb may terminate in a thick, horny hoof; such a foot serves chiefly, almost exclusively, for locomotion. It may paw the ground, it may rub a part of the animal's hide, it may strike or kick; but it cannot grasp, seize, or tear another animal. The terminal ungulate phalanx gives, so Cuvier declares, the modifications of all the bones that relate to the absence of a rotation of the foreleg, and those of the jaw and skull that relate to the mastication offered by broad-crowned complex molars.

DISCUSSION OF REPORT OF COMMITTEE ON ANATOMY, PHYSIOLOGY, AND HISTOLOGY, PRESENTED BY DR. GRADY.

Dr. B. Holly Smith.—I think that Dr. Grady deserves much credit for the able, clear, and concise paper which has just been read. It is customary in our schools to impart a knowledge of special anatomy or of those branches of it that may be of special interest to the dentist; but being of an intricate nature, the study is one that requires a student to devote his whole time to it if he would become proficient in it. This it is not always possible for him to do, and the consequence is that, as a rule, the members of our profession, while possessing a general knowledge of anatomy, do not make any great pretensions as surgical or anatomical experts. Therefore, when an operation is to be performed requiring the location of an important artery or nerve, an appointment is made and sufficient opportunity is afforded meanwhile for the operator to brush up his knowledge and prepare himself for the special operation.

Unless afforded opportunity to mature our thoughts upon the subject, I do not think we are capable of adding anything to the anatomical history which has been detailed, and which could have been prepared only after the most laborious and patient investigation. I can only say that the study of anatomy is an absorbing and fascinating one. Certainly mathematics cannot be more attractive to its devotee than is anatomy to one who persistently and patiently devotes himself to acquiring a knowledge of it. I have only to say, as an apology for my inability to lead the discussion in a direction so interesting as the one here indicated, that we as specialists, while having a knowledge of anatomy, do not possess any special qualification for an intelligent discussion of the subject.

Dr. R. B. Winder.—Anatomy, as is well known, is like mathematics or the multiplication table in that it is a subject that does not admit of much difference of opinion or controversy. The paper

just presented received my endorsement as the chairman of the committee on the subject, and I have nothing to add to it. It is an accumulation of facts that have been compiled by anatomists, and I believe its statements to be absolutely correct. There are many interesting points connected with anatomy which are not embraced within the scope of the paper and which would not be fit subjects for discussion here.

Dr. A. J. Volck.—A paper like the one just presented is understood to be literally accurate in its statements. I therefore beg pardon of my friend (Dr. Grady) to allow me to correct what I consider to be one error in it. I refer to the statement in regard to the rattlesnake. The paper speaks of the rattlesnake as shutting its mouth when it bites. The doctor is mistaken in regard to that. The rattlesnake does not shut its mouth when it strikes; and what is true of the rattlesnake, in this respect, is equally true as to other poisonous snakes. The teeth lie flat in the mouth during quiescence, and are only erect when the snake strikes. This is a peculiarity not of the rattlesnake alone but of all venomous snakes.

Dr. R. Grady.—If the statement of the paper is not accurate, I am grateful for the correction.

Dr. R. G. Winder.—I do not think that Dr. Volck is correct in assuming that the language of the paper is as he has stated it. That the rattlesnake strikes and does not bite, so far as the use of its poisonous fangs are concerned, is well known. If the paper contains a statement to the contrary, the error escaped not only my notice, but that of the other members of the committee.

Dr. R. Grady.—The statement was based not upon any personal knowledge of my own, but simply upon what I regarded as a matter of record. I have not here the authorities with which to support the statement, but I have preserved the original extracts which I made and will refer to them later. Upon consulting one of our members who, I thought, was familiar with the peculiarities of the rattlesnake, he was unable to give me sufficient light on the point, and I was obliged to rely upon the books. I will either verify the statement or, if it is not correct, expunge it.

Dr. A. J. Volck.—That part of the report to which I refer states that "the venomous class of serpents have in the front of the upper jaw two or more long, curved fangs, communicating by a canal or a groove with the poison-gland behind and below the orbit; the muscles which close the jaws press the venom into the wound made by the teeth; in the rattlesnake these fangs are movable, and may be bent backward in a fold of the gum when not in use."

That is what I say. They are bent backward in all poisonous snakes. In the rattlesnake these fangs are movable.

My object is to show that it made an exception in favor of the rattlesnake as the only snake whose teeth are movable and lie back in the mouth during quiescence; my own contention being that this peculiarity is applied alike to all poisonous snakes.

Dr. Edward Nelson.—I endorse the general scope of the paper, inasmuch as, instead of being confined to the extraction of teeth and the making of artificial teeth, it has taken a wider range upon the theory that dentists should be educated in all the branches pertaining to their specialty. Regarding it in that light, I think the paper is ably written and is worthy of the endorsement of the Association.

Dr. W. A. Mills.—I must take exception to the statement of the paper in reference to the embalming of the dead by the Jews. I believe that the Jews are strictly opposed to embalming, though there was an exception in their case, as we learn from biblical sources, and that was when Jacob was embalmed and carried from Egypt.

Dr. Volck.—He was embalmed by the Egyptians.

(To be continued.)

ODONTOLOGICAL SOCIETY OF PENNSYLVANIA.

THE regular meeting of the Odontological Society of Pennsylvania was held Saturday evening, January 4, 1890, at the hall, Thirteenth and Arch Streets. President Truman in the chair. A paper was read on "The Dental Crown," by W. H. Gates, D.D.S., Philadelphia (see page 257); also one by C. H. Littleton, D.D.S., Philadelphia, on "A New Reamer for Pulp-Canals," as follows:

There is no operation in dentistry which requires more skill and care than the treatment of the roots of devitalized teeth, and yet, judging from the various methods advocated, the dental profession is far from a satisfactory solution of the problem.

It is not the intention of this paper to discuss the different conditions requiring root treatment, but only to present some new facilities for the preparation of the canal and hermetical sealing of the apical foramen.

¹ The discussion of this paper was deferred until Dr. Littleton's paper had been read, and both papers were then discussed together.

To insure permanent success, it is necessary, first, to carefully remove the entire contents of the canal without forcing any substance whatever through the foramen; secondly, the canal must be sufficiently enlarged at the apex to enable the operator to make a filling at that point with a strictly impervious, non-absorbing material.

To accomplish this an instrument is necessary that will cut smoothly, clearing itself as it advances, without any piston-like effect. The instruments I use for this purpose are self-centring in the canal without the usual guide-point. The ordinary point on a canal reamer has a tendency to force material in advance instead of withdrawing it, and it also retards the cutting. The only bearing of this reamer is its rounded front, which, by being short, enables it to centre itself in the canal without interfering with the flexibility of the stem. This front is cut into very definite blades for rapid cutting and self-clearing; and the general form of the reamer, being a flattened globe, serves to withdraw the cuttings.

The longest diameter of a pulp-canal reamer should be at right angles to the stem, in order to permit the flexible stem to control it from its front instead of from the rear. Thus it is always free from the cramped position of a long bodied reamer and the consequent danger of breakage.

The stem should have a fine spring temper, so as to operate easily at any required angle,—its flexibility varying according to the directness of the canal. For the more crooked canals it should have a uniform flexibility extending two inches from the cutting end.

The handle is octagon in shape, which, in connection with the flexible stem and cutting front of the reamer, makes this hand instrument so delicately sensitive to the touch of the operator that he is enabled to feel its advance in the canal, and, by the greater resistance, judge of its approach to the end of the root. I have them made in sizes varying from 1 to 4.

To hold the flexible stem at the necessary curve, and thus relieve the reamer from side-pressure when operating in the roots of posterior teeth, I have a hole made through the centre of a mouth-mirror; the stem passing through from the back can thus be controlled by the handle of the mirror.

For convenience in placing the flexible stem in this position a narrow slot is cut in the mirror from the side opposite the handle. Hooks soldered to the rim of the mirror will also further assist in guiding the instrument.

In reaming, or in any operation in a pulp-canal, it is of the first importance never to produce a pneumatic or piston-like effect. Periodontitis is often produced from this cause alone, as a bubble of air, charged as it is apt to be with septic matter, is highly irritating, and its imprisoned elastic force, if maintained, is more hurtful to the peridental membrane than a puncture by an instrument. It is, therefore, obvious that thorough desiccation of the canal is an essential prerequisite. With perfect dryness and the self-clearing action of this instrument no material whatever will be forced through the foramen.

In operating in a small and crooked canal, as, for instance, in an anterior lower molar, the approach at the mouth of the canal should be straightened with the engine-bur, cutting in that case very freely towards the front walls.

To ream a canal with safety and facility the reamer must be proportioned to the size of the canal. Having followed a very fine canal with reamer No. 1 a short distance,—thus obtaining greater freedom for the flexible stem,—it is easily enlarged with No. 2.

When the end of the root has been reached with this reamer, there is a definite shoulder formed at that point, against which an amalgam filling not larger than a small pin-head can be easily made. The amalgam should have such plasticity that a small portion may be carried on one of these reamers and tamped gently to place. Amalgam is well adapted for this purpose because so little force is needed to make it an hermetical stopping, and, being non-porous, it cannot become charged with septic matter. As cotton, the cements, and especially gutta-percha absorb the matter that remains more or less present in all cases, the necessity of impervious sealing at the apex is clearly indicated. The apical foramen being sealed with amalgam, the remainder of the canal can be filled with cotton covered with gutta-percha, or other material easy of removal, if future operations in the canal be found necessary. Should it ever be necessary to reopen the foramen, the small amalgam filling can be readily cut away with one of these reamers.

In case of an enlarged foramen, from whatever cause, the softened dentine and cementum can be removed with one of these instruments, and a shoulder formed near the end of the root with the next in size, against which a plug of platinized silver wire covered with amalgam may be adjusted.

The amalgam filling, made at the end of the root, affords great advantage when the root is used for crown- and bridge-work, en-

abling the deeper anchorage of the pin and preventing any disturbance of the peridental membrane during insertion or removal.

DISCUSSION.

Dr. J. A. Woodward.—The reaming of root-canals has been as strongly advocated as objected to by many competent operators. The practice of those who do not ream is largely the result of the use of defective instruments. After a struggle to remove the tempered point of a drill from a canal difficult of approach, most of us are careful not to have that experience repeated, and, to avoid it, only ream or enlarge a canal as far as we can perfectly control the instrument used.

The set of reamers presented to us to-night is a decided advance. The slender, flexible shank permits the cutting blades to follow a canal, when the reamer is of proper size in relation to the diameter of the canal, and should give us the means of safely reaming where we would not venture with the older drills. The perforated mirror is an ingenious assistant. As to reaming to the apex of all roots, I have been led by experience not to try it. Generally I ream sufficiently to gain access near to the apex. I have found that the less the canal at the apex is interfered with the better has been my success.

My experience with crown- and bridge-work has been quite limited, but if for an abutment for a bridge or not I think all roots, with few exceptions, should be so treated that the canal-filling should not need to be removed, as removable root-fillings appear to invite the very conditions we wish most to avoid. The use of gutta-percha to make the joint between the new crown of Dr. Gates and the root I can unreservedly endorse, as it has proved with me the best material for that purpose.

Dr. Register.—I do not think it matters much whether you ream or not. In reference to root-fillings we are not able yet to distinguish just which roots should be filled with cotton, which with gutta-percha, and which with amalgam at the apex. If the pulp has been removed, I prefer to fill the tooth with amalgam even to the apex. I am much pleased with the instrument and think it a very good idea.

Dr. Roberts.—If I understand it right, the doctor claims that by the flexibility of the stem of his instrument he gets a delicacy of touch far greater than with the ordinary instrument, and which enables him to follow any canal and prevents any mistake.

Dr. Littleton.—Dr. Roberts grasps the idea. If there is any canal, that instrument will follow it, and follow it to the apex. The instrument is very delicate to the touch. Then, the great advantage is that it does not push matter ahead of it and carries no septic matter into the canal. If we have to reach the apex of a bad root in a tortuous canal, while this reamer will follow the canal it will not push matter in advance of it.

Dr. Jamison.—When I first began to practise dentistry I used to feel along with a flexible instrument which would cut the canal open; but now I have no use for it. From the instrument exhibited it looks very much to me that it cannot but force matter ahead of it from the twist which it has.

Dr. Littleton.—If the doctor will take my instrument and try it awhile I think he will change his mind and will find it quite different from what he anticipates.

Dr. Faught.—Some six weeks ago I had the pleasure of giving some statistics to a society in New York on "whether to ream or not to ream," and I can assure you it is a moot question, and not at all decided that we should always ream. I would like to know the practice of each, and hope all present will state in their discussion whether they are in the habit of reaming. I let the apex alone after I have cleaned out the root-canal. It may be some advantage to the teeth to fill the apex with cotton, gutta-percha, or what not, but I fail to see it. When I wish to ream a canal I can feel with a flexible instrument as well as I can with a flexible point.

Dr. Tees.—I am pleased with Dr. Littleton's reamer and think it is a good instrument. The fault of Dr. Gates's crown is that the post comes to the labial and not the palatal surface of the tooth. I think an offset of $\frac{1}{8}$ to $\frac{1}{4}$ of an inch on the next tooth will serve very little to hold it in place.

Dr. Gates.—The anatomy of the tooth will determine the direction of the post.

Dr. Tees.—This crown is some advance upon posts for the teeth.

Dr. Bonwill.—It is so seldom that we hear of a new thing with any real merit in it that we are always inclined to doubt the usefulness of it. But I am inclined to think well of Dr. Gates's crown. I have crowned teeth which were used for five years, and no trouble was experienced with them.

Dr. Truman.—In regard to Dr. Gates's crown it is evidently an advantage to have the post or pivot on the concave side of the root.

When properly applied with the instrument which Dr. Gates has described it is undoubtedly a great improvement. I regard it as a useful addition to prosthetic dentistry.

INCIDENTS OF OFFICE PRACTICE.

Dr. Head.—I have been noticing for a year or two past that something has been making fearful ravages in the teeth of my patients. I found that on every occasion of this my patient was an ardent lover of "acid phosphate." I felt there must be some connection between this drug and the trouble with the teeth, so I determined to investigate the matter. To do this I got a supply from a druggist and dropped a tooth into it, and found that in thirty minutes it had formed a thin film on the outside of the tooth and the whole enamel was softened. In two days the enamel was as soft as the other part of the tooth, and the whole tooth could be crumbled away.

Such being the case, I thought it best to report it to this society, that others having patients using this drink might warn them of its deleterious effects.

Dr. Truman.—I have heard the same complaints made against this drug, and feel that we all should warn our patients against its use.

UNION MEETING OF THE CONNECTICUT VALLEY
DENTAL SOCIETY, THE NEW ENGLAND DENTAL
SOCIETY, AND THE CONNECTICUT STATE DENTAL
ASSOCIATION, AT SPRINGFIELD, MASS., OCTOBER
23, 24, and 25, 1889.¹

(Continued from page 285.)

DENTAL EDUCATION.

BY N. MORGAN, D.D.S., SPRINGFIELD, MASS.

MUCH has been and is constantly being written on the subject of dental education. Is the profession as a whole even reasonably well educated? A few have been fortunate in acquiring an advanced professional education, and are qualified to associate with

¹ Reported for the INTERNATIONAL DENTAL JOURNAL by Geo. A. Maxfield, D.D.S., Holyoke, Mass.

members of any learned profession, and many of these men are endeavoring to lift the laggards into the light and, after revealing to them their need, to hold up high standards of attainment. That which was the peculiar privilege of the few may become, to a large degree, the possession of many. Are we satisfied with the sordid element in our nature which looks only to the return of dollars for our work? or, shall we cultivate the humanitarian element which is a blessing to the sufferers who come to us for relief?

To claim that wonderful advancement has not been made would be libellous; dentistry is moving forward, but we are not satisfied with the return for the efforts put forth,—it is not all that could be desired or reasonably expected.

If this statement is accepted as correct there must be some reason for our present condition. Would it not be well to try to analyze our situation to some extent? Perhaps we may arrive at more efficient methods for its improvement.

First let us glance at our present educational facilities,—their advantages and failures. For those who can avail themselves of them,—and every individual who now enters the profession should do so,—there are the dental colleges with their corps of earnest and efficient workers. They furnish facilities for the acquisition of education, both of mind and the equally essential one of hands skilled to work out the suggestions of the mind. That the colleges are to be praised for such efficient work we all agree. At the same time they do not claim to educate a student so that he will have no further need of increasing fitness for work, but rather an adaptation of the individual for additional study and research.

A second class to consider is made up of many practitioners who either could not or would not take advantage of these privileges. These have, however, the same educational facilities at hand common to us all. I refer to the dental literature which includes some journals of great excellence; dental societies, clubs, etc. These organizations are usually open to all who have a desire for improvement, at the same time being of slight expense, compared with most social clubs.

This, then, seems to be our condition as a profession; there are a multitude of men of various ages,—many with slight early educational advantages and at present without the perception of *how* to study, or the ability, so to speak, of knowing how to set themselves to work in a practical and productive way. "But," remarks some one, "we have known all this for years, and have we not been striving to bring about a more desirable condition? and are we

not almost discouraged in the attempt to make our profession an honored one, and to place it on a plane with the medical profession, aspiring to have our vocation recognized by the world as a branch of the healing art?" What is the result? We are forced to confess ourselves still in bonds to our surroundings, but not in the way of permitting them to cause discouragement. We have not the history of the medical profession, it is true, but we are capable of *making* history. To-day we are not so proud of our ancestry as our deeds. It is the apostolic "forgetting that which is behind and reaching out to that which is before" which is to make our personal or professional success. Retrospection may be productive of good, if our mistakes and failures lead us to change our ways so as to avoid the evils of the past.

We believe that there is a still better outlook, if not through one avenue, perhaps another will be opened. Unforeseen exceptional advancement may be made in the coming year or years, and the object of presenting this paper is to offer possible suggestions in the way of its achievement.

For a long time we have been convinced that our present desultory method should give place to a systematic course of study outside the college walls. We read many essays and articles, good enough in themselves, but without collateral study they lose much of their power. How different would have been the effect of Professors Andrews's and Sudduth's lectures of last evening if the hearers had previously read something relative to the subject? Some, if they study at all, prefer *special lines* of study, which in our opinion should *follow* a course having a general outlook. One apparent need in this direction is an element which shall draw us together, a uniting of interests, "a brotherhood," if you choose to call it so. Cannot the "Chautauqua" system be so modified as to meet our demands? Most of us are somewhat familiar with the workings of that system, and know of the wonderful educational and moral influence it has and is yet exerting. There are now circles in almost every civilized portion of the world, over one hundred thousand persons having been allied to the movement. This result has not come by chance but by natural laws.

President Garfield, in a speech at Chautauqua, said, "It has been the struggle of the world to get more leisure, but it was left to Chautauqua to show how to use it;" the real Chautauqua idea being the saving of time, the gathering up the moments which are ordinarily wasted, and so employing them as to bring rich returns. The student is encouraged to study because, virtually, he has a

tutor; because a well-defined course of study is prepared for him; because a multitude of associates are pursuing the same, and a feeling of sympathy is common among them.

Besides the study, there are the "Local Circles," which hold regular meetings in the interests of their work, whereby great enthusiasm is aroused. At the end of each year comes a test to be answered in writing, and to those who persevere and pass successful examinations for four years a diploma is awarded. After this general course, special courses may be pursued, which are increasingly interesting and instructive and may be continued indefinitely.

The query now is, Can we not adapt to our own need a system similar to this? If we have not already such text-books as we need, can they not be prepared,—books concisely written and suited to such a purpose? We have sometimes overlooked the best in our lack of time to discriminate carefully, and the inferior on which we often stumble discourages us from perusing further, but we may have a systematic pursuit of such knowledge as will in some way or degree fit us to become more of a power in every feature of our profession. Is not that method which "reaches down and lifts men up" one by which we may bring the greatest number into line? The greatest difficulty in leading men into the student life is the first step; for after the taste is formed the difficulties begin to vanish.

A thirst for knowledge is a law of our being given for good of self and that of the whole world. If the desire is dormant it may be revived by suitable influences. Our particular branch of science is as distinguished as any for the demand it makes upon skill in manipulation, and although the laboratory and chair furnish the best school for our handicraft, yet we need as much knowledge as we can assimilate and organize into a basis for our work,—not thinking of our own pleasure alone, but as an obligation to those who put themselves under our care.

If such courses of study were presented to our profession to-day, the needed requisites being at hand, how many would rejoice and take advantage of the privilege? How many *here present* would be glad of the opportunity? How many would form clubs or "circles" of two, six, a dozen, or more, meeting from time to time for discussions of subjects gone over, for experiments, or anything which would help to make study a pleasure and our life brighter and better worth the living.

I am sure members of the old "Springfield Dental Club" will

agree with me that pleasure and friendly interests are promoted and the weariness of many an hour lightened by such intercourse. How much stronger the bond of sympathy if there were clubs in Boston, Hartford, Providence, and every other place where a club could be organized, all using the same course of study,—or some perhaps taking the advance courses, but all in the same general organization. Some will make excuses,—want of time, want of opportunity, want of talent or of cleverness. Are we making the best use of all our time? Are we improving the one or more talents given us? Are we as clever as we might be if we sought to know what another's cleverness has done? Great and good thoughts may lie in the mind of an individual brother for his personal good; he may not be able to write an acceptable article for a journal, but meeting another who possesses the gift of clear and forcible speech without the power of originality, they can conjointly benefit the brotherhood. There is a vast amount of thinking that ought to be in the market, bringing in great returns. It might surprise us to learn that while on change, our idea, expressed faultily though it may have been, was taken possession of by one who so transformed it with beauty and strength that when it returns to us and others, it may aid us in our work, or, warming and refining our hearts, help us to be more perfect in character and life.

How such an organization can be brought about is hardly possible for one single-handed to determine. Perhaps a committee might bring the subject before the American Association.

Some journal might be published in its interests. Possibly Professor Sudduth and the managers of the *INTERNATIONAL JOURNAL* might use its pages for the purpose, and the enterprise be managed by them and an associate committee from the American Association combined, the courses of study and text-books to be selected and arranged under their supervision. It would be necessary for every person to become a regular matriculant and pay the nominal fee therefor, in order to enjoy the privileges of such an organization and become eligible to receive a diploma at graduation. The matriculation fee should be as low as possible and books furnished at reasonable rates. The whole expense need not be so great as to prevent any one from entering the ranks. Probably there are few among us who do not squander more each year than would cover the necessary expense for the course.

Moreover, the increased respect in which each member would be held by the community would tend to increase and improve his

practice, thus bringing a material return for all investment in the cause.

It is to be emphatically stated that this method is in no sense suggested to take the place of the present college course, but is subsidiary to it. Rather is it to *precede* and *follow* the college course, and for those already in the profession who are debarred from its advantages. As long as we live we may learn if we will.

DISCUSSION.

Dr. Barrett.—The subject is one that should appeal to the inmost professional heart of every dentist who loves his calling. What has the future in store for us? Are we to sit still, to rest content with what we are, or shall we make an advance that will be commensurate with our past history? This matter is not now presented for the first time. The West has had it under consideration, and Dr. J. D. Moody, of Illinois, has written some very thoughtful papers in advocacy of a system of post-graduate study, somewhat upon the Chautauqua plan, which commends itself to every thoughtful dentist. In this new and aggressive department of medicine there is a hope found nowhere else. We are opening up new fields. We are free and untrammelled, and are not held down by the bonds of precedent and established custom, as are all the old professions. We have not to look back and guide our footsteps by the past, but need gaze only ahead. There are no narrow prejudices to hamper us, no old traditions to keep inviolate, but we are like children upon the virgin prairie, and may stray where we will. Divinity is held down by iron creeds which forbid free thought, and which prescribe a narrow path beyond which the members of that profession may not stray, nor even look. Law is more a matter of precedent than of prescribed rule, and courts in their interpretation, even of written statutes, are governed by the opinions of those who have gone before, and into the merits of which they may not inquire. Medicine is largely a system of empiricism, and it is necessarily the most conservative of professions. Consider what has been the fate of those in that profession who have advanced new theories and ideas. Think how the grand discoveries of Harvey and Jenner were received; remember the inertia of medicine and its intolerance of new principles, and then ask yourselves what hope the world of science has there. But we have no creeds, no precedents, no past by which we must be governed. Dentistry has such a chance as has never

been granted the older professions, which have existed since man emerged from a state of barbarism and have not had our opportunities to start on a career guided only by nineteenth-century enlightenment. There is nothing to hinder an advance such as the world has never seen. Shall we make a record for the future, or shall we be content to rest where we are, thinking ourselves as large as we ever can be.

I have never seen a December in which I did not think I could view a manifest advance from the preceding January. All my life I have been climbing, climbing, standing on tiptoe, watching for the dawn of a yet earlier sun. I hope to continue thus until I shall for the last time hail the dawning of a new professional advancement. Dentistry is very largely made up of men who are necessarily earnestly looking towards the future, because they have no past to rest content in. It is in this that its hope lies. What shall the future bring forth?

Our colleges are continually taking advanced ground. But they do not yet represent the highest type of thought. They are not sufficiently ahead of the body of the profession. If they do not set a step that is sufficiently quick, if the rank and file are to tread upon their heels all the time, let the societies take the advance and give a new pace. We need a higher education, a deeper erudition. If this is not to be found in the schools, let the private offices furnish it. There is no reason why we should not blaze a path for the world through certain sections of the great forest of ignorance. There is an opportunity for dentistry to make for itself the very highest expression of scientific knowledge. All that is needful is that we should earnestly put our hands to the work and unitedly, shoulder to shoulder, take up the line of march for higher acquisitions. What could resist the impulse of a united profession, earnest for the right?

I am anxious to see the East take the lead in this great work. I want to see the sun of intelligence rise here and illumine the whole world. But this is not to be done by one man or one society. There must be united effort. The East and the West must be in accord, and all our societies must strike hands together. Therefore, I suggest co-operative committees from every society, which, acting together, shall thoroughly organize all earnest dentists into a compact body that shall lift a standard to which all must bow, and set a pace into which all the progressive men of the world must fall.

Dr. W. H. Atkinson.—The remarks we have just listened to

coincide with what I think most about when I am alone. I have feared that we had come to a point in our ambition where we were about to take a permanent rest. It will be necessary to have some revival, at least of our ambition, to enable us practically to formulate and push forward the very desirable course suggested by the last speaker. I think his reference to the so-called professions being confined to iron creeds is fast being removed. For you scarcely find old fogies among old graduates of divinity or dentistry. They are not following out the old leads. Medicine especially has become so imbued with the spirit of progress under the hands of impatient young men that they have about discarded the old way of writing prescriptions. As far as divinity is concerned, you can scarcely find a man who has cheek enough to preach eternal hell any longer. As to the other profession, I do not feel there is much to encourage us, for they go by precedent. They esteem it a breach of brotherly feeling and respect to file a decision that has not been rendered before in some of the courts, irrespective of the testimony before the court, or of the facts of the case, and so they decide more frequently against truth and innocence. It looks foolish to have a set of boys—as we may call them—who have discovered a better way to instruct human beings, and learn from them how to deal with an adverse environment of the human mind. But we must go to them if we progress.

There is no such thing as getting a formulative syllabus, that will reveal to us all the pathological changes. I defy any man to so state the history of any case of disease as to make it cognate with any disease he or anybody else will ever see afterwards. Could we get a little more familiar with a few established basal principles, then we might have something like what I suggested at the last meeting of the American Dental Association.

The time to do something in the direction of the suggestions in the paper is now, when our minds are drawn to it and we see the necessity of it.

It will be the happiest day of my life when I can rise above my ignorance and prejudice and sincerely investigate a case, and it will intensify my joy if I could find my brethren following in that same journey.

Dr. Miller.—I feel that this is a subject of very great importance, and I hope some means will be taken to follow out the suggestions in the paper. It seems to me a committee should take this into further consideration and carry it forward and not let it drop here. I therefore move you, that a committee of three be

appointed to bring in a list of five or more that shall be a committee to take charge of this subject and to report some plan—that will be practical—at some future meeting.

Dr. Shepard.—If any action is taken, it should be by the whole profession, not by a few societies. Now, if these societies could take the initiative, and appoint a committee which would bring other societies to work in the same direction, you will finally secure a congress that would act for the whole country.

Dr. Rhein.—I agree with Dr. Barrett's sentiment on this question, and I would like to amend the motion. It is not to give a course of instruction in any particular school. I therefore move the following amendment: That a committee of three be appointed to try and secure co-operation of various dental societies in the United States, to further some plan of this kind, and such committee to confer with similarly appointed committees from other societies and report at some future meeting.

Dr. Maxfield.—The suggestions made by Dr. Morgan in his paper are too good to be lost, and that they may take some practical shape, I would urge the original motion.

Dr. McManus.—A large committee will be better than the one suggested by Dr. Rhein. I think the chairman would like to be relieved, and therefore I think it might be well for the chairman to name a committee to report a committee for adoption by this meeting. I think the subject suggested is practical, and if carried out, future generations will rise and call the men of this day blessed.

The president then put the motion and it was carried, and Drs. Morgan, Brackett, and McManus were appointed.

After a conference, this committee reported the following names, which were adopted as the permanent committee to take this subject in charge: Dr. N. Morgan, of Springfield, Mass.; Dr. George A. Maxfield, of Holyoke, Mass.; Dr. William J. Rider, of Danbury, Conn.; Dr. George L. Parmele, of Hartford, Conn.; Dr. W. E. Page, of Boston, Mass.; Dr. A. M. Dudley, of Salem, Mass.

Subject passed.

(To be continued.)

Editorial

DENTAL SOCIETIES.

THE past few years have been eventful ones in the history of dentistry. No one thing has contributed more towards the development of this specialty into a science—and a recognized place among the medical specialties—than the excellent work done by the dental societies.

The society has, in the highest degree, been the birthplace and main-stay of dental literature. Had it not been for its fostering care, our literature never would have reached the high plane upon which it rests to-day. The emulation between the different societies has been the most powerful lever to draw out the busy practitioner and secure from him literary efforts which have tended to better the individual and elevate his fellows. Dentists as a class are not inclined to literary work. They labor at the chair all day, and when the evening comes they much prefer the intercourse of the family circle to the solitude of the study; and it is only the promise to prepare a paper for some association, which is made in most instances under great pressure, that spurs the physically weary man to exert himself mentally for the benefit of his brother specialists.

There is a small class of dentists, however, who write articles for publication from other motives, but they are not the ones who are best prepared to instruct, for, as a rule, they are not practical or successful men; and the very fact that they have the time to write, in many instances is proof of their unfitness to do so. In every community are to be found busy men who are most thoroughly prepared to furnish the very best literature, but who seldom or never write anything. Their time is too valuable to spend in putting thoughts on paper when they are coining their efforts into gold. If they are ever induced to present anything to the profession, it is through the earnest solicitations and sometimes importunities of the executive committee of some society. Theirs is seldom, if ever, a voluntary effort; and if estimated by the actual loss of time would come high in dollars and cents, so high, indeed, that no journal in this country could afford to pay for it; nevertheless, it is given without cost to some society and appears in its published proceedings. These

papers represent the very cream of our dental literature, for they bristle all over with practical points that could not be obtained in any other way. Their value is always in the inverse ratio to their production. The society, therefore, deserves the fullest praise for its success in bringing out the very class of men who are best fitted by experience and ability to furnish our literature.

Not only does the society give us our leading papers, but it also furnishes an opportunity for the exchange of opinions under the head of "Discussions." It is there that the dentist is most at home, and the ideas that are drawn out under the inspiration of the favorable surroundings are most valuable contributions to our knowledge. It is true that drift-wood and repetition sometimes creep into discussions, but if well edited, they form the most valuable portion of our literature; little bits, practical points, and comparisons of methods are put in close space. The paper in this issue, on "Some Practical Points learned at Society Meetings," is proof of the truth of these statements.

POST-GRADUATE COURSES.

The society forms a post-graduate course of instruction for the busy practitioner, in which he may secure many advantages, and add to his knowledge of methods of practice. Too much stress cannot be laid upon the value of society meetings, and it has been with the full knowledge of their importance that this journal has steadfastly worked to secure the exclusive control of the proceedings of the leading dental societies of this country and Europe. How well it has succeeded may be known by the fact that the INTERNATIONAL stands to-day as the official organ of the Academy of Dental Science of Boston, the New York Odontological Society, the Odontological Society of Pennsylvania, the Chicago Dental Club, and the American Dental Society of Europe. In addition it contains the exclusive reports of the meetings of the New Jersey State Dental Society, the Massachusetts State Dental Society, the Union Meeting of the New England Dental Society, the Connecticut State Dental Association, and the Connecticut Valley Dental Society; the Pennsylvania State Dental Society, and the Maryland State Dental Society. It has also received reports through its numerous foreign correspondents from several foreign dental societies. To give some idea of the amount of matter presented at these meetings during the past year we will refer to Volume X. of the INTERNATIONAL DENTAL JOURNAL, 1889, which contains 766 pages of original matter and a topical index of 52 pages. By reference to the latter, it will be

seen that during the year four thousand two hundred and thirty subjects were discussed by nearly two hundred dentists,—an average of over three pages to each person. The volume also contains eighty-one illustrations, including three photogravure plates, all the efforts of dentists in dental meetings, and, altogether, it forms a lasting record of the good work done in the leading dental societies in this country and Europe during the year.

In this review of our dental societies we do not desire to overlook the work of the several district societies of New York State, especially that of the First District Society of New York City and of the American Dental Association, reported in the *Cosmos*, nor of the Illinois State and the Chicago Dental Societies, the reports of which form the basis of matter for the *Dental Review*.

DENTAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

Then, again, within the last few years there has been a steady growth in the direction of the Dental Section of the American Medical Association. The meeting last year, at Newport, was a most successful one, and the meeting this year, to be held at Nashville in May, promises to be the most brilliant one yet. The programme, as published in the April number of this journal, contains a splendid array of talent. The report of this meeting belongs exclusively to the journal of the American Medical Association, which has a circulation of over five thousand. It is needless to say that the papers of the Dental Section hold their own in importance and scientific interest with those of the other sections. The paper by Dr. Andrews, in the journal of the Association of April 12, illustrated by a full-page plate showing the predisposing causes that lead to decay, and the other able papers read before this section, and which have appeared during the year, cannot help but have an influence upon the status of dentistry, and tend to interest medical men in dental science, and instruct them in a specialty in medicine, of which general practitioners have heretofore known but little.

No single movement that has been undertaken in late years by dentists has promised more towards bringing together what has heretofore been considered two separate professions than this section in the American Medical Association. Medical men are beginning to learn that dentistry is something more than a mere trade, and dentists are really finding out that dentistry has many things in common with medicine, while all are willing to admit that dentistry, practised as a specialty in medicine, is one of the nicest specialties in existence.

BIBLIOGRAPHY.

MAN AND HIS WORLD. By JOHN DARBY. Philadelphia: J. B. Lippincott Company, 1889.

The pseudonyme of "John Darby" belongs, as is well known, to the distinguished philosopher and surgeon, Professor James E. Garretson, A.M., M.D., of Philadelphia. Amidst the exactions of a busy city physician's life, and the demands upon his time as a teacher in a leading school, he has yet found leisure to give to the world, by means of his various works, many thoughts of a character so profound and comprehensive as is seldom met with in this age.

The first part of the book, "Two Thousand Years After," was published some years since; but with the addition now of a second part, "The Philosophy of the Eternal Now," the author has given the volume the more suggestive title of "Man and his World." The groundwork of the book is the pleasing conceit that Socrates and his friends resumed, two thousand years after his tragical end at Athens, the fascinating conversation as reported by Plato; but now with its scope enlarged by reason of an acquaintanceship with modern Positivism. All those who have a mind above the merely practical affairs of life, whose thoughts love to soar into the realms of the recondite, and to grapple with what is hidden from the material eye, who find the mysteries of matter, man, mind, and soul ever interesting and enticing subjects for reflection, will discover much in this little volume that will give them pleasure and mayhap enlightenment.

PHILADELPHIA AND ITS ENVIRONS. J. B. Lippincott Company, Philadelphia, 1889, pp. 232.

This little book is prepared with the same neatness and elegance that marks all the publications of this firm. Every place of interest is mentioned, copious illustrations are given, along with a good map of the city, all making a volume of so much value that visitors here and even residents can hardly afford to be without it.

THREE INTRODUCTORY LECTURES ON THE SCIENCE OF THOUGHT. By F. MAX MÜLLER. Chicago: Open Court Publishing Company, 1888.

These lectures were delivered at the Royal Institution, London, and first published by the Open Court Company. The illustrious name of the author is a sufficient guarantee as to the quality of the matter, and the name of the publishing company as to the mechanical character of the book.

Foreign Correspondence.

TO THE EDITOR :

Having just returned from a trip through New Zealand, I enclose a report of the first annual meeting of the New Zealand Dental Association, which was formed at a conference of delegates held in Wellington last July.

"The sittings were held at the Criterion, and occupied two days. The following gentlemen were present: Messrs. Boot, Hunter, Throp, J. P. Armstrong, F. Armstrong, Robinson, and Hewitt, of Dunedin; Messrs. Thomas and Merewether, Christchurch; E. Cox, Auckland; J. Goodwin Cox, Timaru; and Thompson, Invercargill. Apologies were read from Messrs. Rawson, Hoby, and others unable to attend.

"Mr. Boot (president of the Association) occupied the chair, and welcomed the members to Dunedin.

"At the sittings of Thursday, after receiving reports from branch representatives, the by-laws of the Association were reconsidered and confirmed, the first only of these evoking prolonged discussion. The question as to whether membership should be thrown open to all registered dentists, without any condition to the mode of conducting practice, was fully discussed.

"The sitting of Friday morning was devoted to the consideration of the 'code of dental ethics.' In compliance with the request of the Wellington Conference, Mr. E. Cox submitted to the meeting a paper upon this subject, dealing with the obligations of the dental practitioner in relation to his profession, to his patients, to his *confrères*, to the medical profession, and to the general public. With the vote of thanks Mr. Cox was desired to revise his paper for publication with the report of the proceedings of the meeting. The afternoon sittings considered the legal opinions received from Sir Robert Stout, and the cases of alleged violation of provisions of the Dentist's Act already open to litigation.

"A vote of thanks to the president and secretary, and the decision to hold the next annual meeting at Christchurch, closed a very cordial and successful conference.

"ALFRED BURNES.

"SYDNEY, AUSTRALIA."

Domestic Correspondence.

TO THE EDITOR :

A question of professional ethics.—I have never been of those who felt particularly solicitous concerning the source of dental literature, so long as the quality was satisfactory. Particularly in our journalism have I felt indifferent, provided it be good journalism, and such as will add to the dignity and subserve the best interests of dentistry. Perhaps I have at times thought that I recognized a tendency in the mercantile and trade element to dictate to and antagonize the professional, but I have clung to the idea that these matters will regulate themselves. I have thought that only fair play was demanded, and the good sense of dentistry would settle the rest.

Our calling is not strictly amenable to the rules which govern any other, because, while, as I believe, it is professional in its main aspect, it has a mechanical and artisan-like side. Every thinking man knows that the laws which govern trade and mechanics are not applicable to a profession. The methods which are entirely legitimate in mercantile ethics are inadmissible where a liberal profession is concerned. Advertising, for instance, which is the life of trade, all men agree is quite beyond the bounds of professional ethics.

The dividing line between that which is "professional" and that which is "unprofessional" is exceedingly difficult to make manifest to the eye of a layman, but it is as obvious as one's nose to him who, having been regularly admitted within the pale, is animated by true professional feeling. To men engaged in trade, and whose minds are pervaded by mercantile ideas, the laws of professional ethics are quite incomprehensible. An American or a Frenchman cannot understand the admiration of the Welchman for the odorous leek; but to him who has been trained in Welch lore and tradition the leek stands for all that is honorable and heroic in his national history. To the Indian our national flag is but a piece of gaudy patchwork; but to the American patriot it is the symbol of his nationality. So to the real professional man the spirit of the code

of ethics, although it may be foolishness to the unprofessional Greek, is that which marks his professionalism.

I recognize in dentistry two elements; the one strictly professional according to the code of our mother profession, medicine; the other more nearly allied to mechanics and trade. Although in a measure antagonistic in certain aspects, it does not follow that they should make war upon each other. Their mutual relations may, and should be, discussed in a spirit of temperance and candor. Good men on each side are doubtless swayed by their interests and their associations, but that gives no excuse for recrimination. The man who has, perhaps, gone through a professional course of study and then left the professional ranks and gone into trade, or who has introduced some manufacturing interest into his professional life, cannot but be imbued with the spirit of trade. Another may have devoted himself to the mechanical part of his calling and drifted out of professional associations and sympathies. He may have an inventive talent, and have devised some ingenious appliance from which he desires to reap a benefit. There is no reason why he should not do this, so long as it is done decently and in order, but he should not insist that the man who has kept strictly within ethical lines should adopt his views and methods. He should be prompt to recognize the fact that just to the extent to which he has gone into trade has he abandoned a professional life, for a man cannot follow both. Who will claim that the dentist who has commenced the manufacture and sale of some vendible article, or who has gone into mechanics, is any better judge of ethical matters than he who has kept within the line of medical ethics? More than this, who will deny that the mind of such a man is not, to a greater or less degree, imbued with those trade methods and ideas which are antagonistic to professional life? Such a man may be quite as conscientious as another, but he is scarcely qualified to sit in judgment upon professional matters. Trade is quite as honorable as a profession, but it is not identical with it, and is not amenable to the same laws. If a man is imbued with the spirit of the one, he cannot enter into the feelings of the other.

The most of our dental journals are edited by men engaged in active professional life. Their sympathies are with dentistry and not with that which is antagonistic to it. They are legitimate members of the profession, and not outside of it, engaged in trade. So when a question of ethics arises, they are qualified to speak upon it without being liable to the charge of impertinent intermeddling with that with which they have nothing to do, and which, from the

very circumstances of the case, they cannot comprehend. Yet some, even of these, it seems to me, have not been professionally just in certain instances.

Nearly a year ago, Dr. H. C. Merriam presented before a well-known dental society his views upon certain matters of professional ethics. No one could question his right to do this, for he occupies at least a respectable position among dentists, is known as a candid and honorable man, while his intelligence is undisputed. Certainly no one will deny his devotion to what he believes to be the best interests of dentistry, nor the purity of his motives. He viewed matters, as might naturally be expected, from an exalted professional stand-point. He thought he saw certain tendencies which were inimical to professional advancement, and he pointed these out, clearly but dispassionately. There was no tinge of personal malice, no bitterness of disappointed ambition manifest, but from his high position he argued against what he thought were debasing tendencies. What was the consequence? The journal in which his article was published as a part of the transactions of the society made answer to it from the mercantile view, as of course was to be expected, but it also took him personally to task for openly discussing general principles. The very party which is least qualified to speak upon a question of ethics severely condemned the writer for discussing professional relations. An advocate who has no standing whatever in court assumed to sit as a judge in a strictly professional matter, and this was echoed not only by every editor who is in trade, but by some from whom might have been expected different sentiments. "Tray, Blanche, and Sweetheart" all opened upon the trail of a professional man who had only spoken of professional matters before a professional audience. There seemed a determination to make an example of him; to so hold him up to personal ridicule and disparagement as to make of him a solemn warning. A distinct opposition to the commonly accepted ethical spirit was shadowed forth, and a determination to deter others from resisting what they might honestly believe to be an encroachment of the mercantile upon the professional spirit. Granted that the writer was utterly mistaken in his views of professional matters; had he no right to express his opinions before his professional brethren and invite discussion of the subject? Perhaps he was incompetent to judge what was for the best interests of dentistry; but were those who had nothing in common with professional life any better qualified? If he misrepresented the real feelings of true professional men, did he not

appear before a tribunal which is an acknowledged authority upon such questions?

The treatment which he received stirred the blood of more than one dentist who had not recognized a possible danger, and instead of repressing a professional spirit it has stimulated it as nothing else could have done. It seems time that some voice should be raised in behalf of fair play. If professional men are to be throttled because they express views which may not tend to the profit of trade, we all should know it. We have seen dentistry bound hand and foot, by patent rights and sordid monopolistic aggression, in a vulcanite web from which nothing but death relieved it. We are even now threatened by another exhibition of this same tendency, and nothing but a bold, determined, united action will protect us. That same patent-right element has endeavored to strike down the man who stands as our representative in resistance. In his defence every professional arm has been raised. Why should not the same desire for fair play be guaranteed another who honestly endeavors to strike a blow for what he deems to be professional honor? If he be mistaken, we ourselves should be the judges of the fact. If he be right, surely it is time that somebody sounded the trumpet and raised the cry, "To your tents, O Israel!" We have no quarrel with trade, but we do protest against its assuming to sit as a judge in matters of professional ethics.

W. C. BARRETT.

Current News.

At the March meeting of the Chicago Dental Club it was voted to engage Dr. W. X. Sudduth to deliver a course of lantern lectures upon Biology during the first and second weeks of June.

On March 25 the Chicago College of Dental Surgery graduated a class of sixty. The whole class numbered seventy-one, but eleven of these failed to pass satisfactory examinations and consequently did not receive the much coveted diplomas. This is an indication of more thorough work on the part of the college and a determination not to graduate incompetent men.

DENTAL EDUCATION was the theme for discussion at the last meeting of the Chicago Dental Club. The paper of the evening was prepared by Dr. C. Stoddard Smith, of the Illinois State Board of Dental Examiners. The discussion was opened by Professor E. L. Clifford and Dr. E. S. Talbot.

THE Faculty of the Chicago College of Dental Surgery are determined to have the "second" International Dental Congress held in Chicago in 1892 or 1893, and secure its control; at least it would seem so from the speeches made at their late commencement banquet.

DR. CROUSE has been invited by the Chicago Dental Club to present the interests of the "Dental Protective Association" at the April meeting. He is doing an unselfish work and should be encouraged to go on. The very least that the members of the profession can do is to join the Association. Mail him that *ten dollars* at once and save yourself from the clutches of a worse enemy than Josiah Bacon.

THE commencement exercises of the American College of Dental Surgery, Chicago, were held on March 25, and a class of twenty-nine were launched upon the troubled sea of professional life.

THE University Dental College, Chicago, held its commencement exercises April 29.

This college has inaugurated an advance step in the State of Illinois in the matter of final examinations.

By a vote of its Faculty and also of the graduating class, the Illinois State Board of Dental Examiners was requested to conduct the final examinations of the graduating classes. The examinations of the State Board were an oral in addition to the regular written examinations conducted by the Faculty.

Dr. W. C. WARDLAW says that dentists are too often remiss in ability to satisfactorily answer the unwelcome questions of intelligent patients as to "why" the teeth decay, but whip the devil around the stump with indefinite generalities, or cover up an inglorious retreat with a flow of technical terms.

WHERE a cavity extends both up the neck of the tooth and on the labial surface of the crown, Dr. A. H. Thompson selects a piece of gum tooth having the proper color for both gum and crown portion, and inserts an inlay, restoring the whole to a perfectly natural appearance. If the color of both gum and tooth cannot be matched from a single tooth, each can be matched separately and dovetailed together, the joint being imperceptible if accurately ground.

DR. T. E. WEEKS says that at thirteen, if injury is inflicted at the distal ends of the dentinal fibrils, the nerve-endings, it is transmitted along the fibrils to the sensorium. The water in the tubuli, which is a constituent of the fibril, and which also surrounds it, is essential to this transmission of sensation. In proportion as the water is removed sensation is modified. Hence the adoption of different methods of dehydration for the control of sensitiveness of dentine, either by raising the temperature by means of hot air etc., or lowering it through cold applications. The rapid motion of a keen instrument on sensitive dentine is painless, but the instrument should be one that will free itself of chips, and be small, thus having less friction.

DR. PETERSON, Iowa, has, with the greatest satisfaction to himself, replaced unsightly, glaring gold fillings, in the neck of the anterior teeth of his wife, with porcelain inlays made from good English teeth, in which he was fortunate in finding exactly the right shade. He had inserted the gold fillings as the only thing to be done in the case, but deplored them as "a vulgar advertisement of his own work." He thought it much easier to grind a piece of ready-made tooth than to fire up a furnace and bake a small filling.

THE Fourteenth Annual Meeting of the New Hampshire Dental Society will be held in Concord, commencing Monday evening, June 16, and continuing till Wednesday noon of the 18th. An interesting programme will be issued to members of the profession in this State in due time, and all are cordially invited to attend.

The Board of Censors will meet on Monday evening, June 16, in connection with the Society.

EDWARD B. DAVIS, *Secretary.*

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Original Communications.¹

REFLEX OCULAR AND FACIAL SYMPTOMS OF NASAL DISEASE.²

BY EDWARD S. PECK, A.M., M.D.,

Visiting Surgeon to Charity Hospital; Consulting Surgeon to Bellevue Hospital, Out-Door Poor Department; Ophthalmic Surgeon to the Montefiore Home for Chronic Invalids; Member of the New York Pathological Society; Fellow of the New York Academy of Medicine, etc.

THE subject of reflex neuroses or of distant reflexes of the nervous system, has always been an interesting one; and it will so continue, as long as there remains any region of disease which fails of coming under the law of localized areas of nervous force, or of being subordinated to distinct nervous impulse. To be able to discuss intelligently the *fons et origo* of symptoms of disturbances of one organ, by means of disease located in another organ, possibly quite remote, is quite in the scope of the topic under consideration. It rather disarms our faith in the old physiological law of direct nerve-irritation to be told of pathological phenomena appearing in a part remote from the source of irritation; but you will agree

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in this country.

² Read at the stated meeting of the New York Odontological Society, February 18, 1890.

with me in the truth of this possibility by multiple illustrations taken from symptoms in the face and mouth of disease that is purely, and without question, dental. On this subject the literature is quite meagre. I am astonished to find that twenty years ago a most able authority¹ in dental literature hinted at dental reflexes, when he said that neuralgia is not a disease, but simply a phenomenon, or the expression of an immediate or distant lesion.

The first inquiry in neuralgia, he writes, is to search for the cause, which is by no means evident; it exists, and in many instances nothing short of a thorough search will reveal it; when, to argue effect from cause, we will find that principles must be deserted, physiological theories must be abandoned, even anatomical relations and connections must be forgotten; and the neuralgic expression must be treated "with the hope of an accidental success."

As graphic examples of the phenomena of distant and peripheral neuralgias, there may be cited otalgia, hemicrania, or even sciatica, as a result of an exposed tooth-pulp, or of pressure from an exostosis. It is undoubtedly a familiar fact that the extraction of a canine, or bicuspid, or molar tooth, relieves, as with this author, neuralgia of the face, odontalgia occurring in consequence of menstrual irregularities, megrim, and even neuralgia of the nates and thighs. As further instances of dental reflexes, and more pertinent to the scope of this paper, may be mentioned the neuralgias found in the infra- and supraorbital nerves, the globe of the eye, the temples, and particularly in a spot near the vertex, a little to that side of the median line on which the affected tooth is found. Catarrhal affection of the middle ear has been caused by carious teeth; so, too, amaurosis by the crowding of teeth. All these and more are cited as examples of dental reflexes.

There are, however, as every dental surgeon knows, many instances of distant neuralgias, which neither extraction nor filling of the properly-selected tooth will alleviate.² These instances can only be explained, according to Von Recklinghausen, by the irritation of the sphenopalatine ganglion and superior maxillary nerve. The alveolar border of the teeth possesses a rich kingdom of nerves,

¹ Garretson, "Diseases and Surgery of the Mouth, Jaws, etc." Philadelphia: Lippincott & Co., 1889.

² Ziem, "Bedeutung d. Zahnkrankheiten für d. Entstehung v. Nasenleiden." *Allg. Med. Centr. Zeitung*, September 2, 1885, p. 1117.

—the anastomosing filaments of the anterior and posterior dental nerves. How often do we see teething children, and children suffering from caries of the upper back teeth, who have at the same time discharges from the nasal mucous membrane, with swelling of the inferior turbinated bones and adjacent parts of the septum nasi, and with possible elevation of temperature?

In isolated cases the same connection is found between dental cysts, alveolar swellings, pathological growths from the teeth into the buccal cavity or into Highmore's antrum, abscess-formations of tooth-roots, etc., with swellings of the nasal mucous membrane, of the lips, or cheeks. In some of these isolated cases the only way to destroy the persistent neuralgias, or to prevent their insidious recurrence, is by means of the galvano-cautery, or chemical caustic to the nasal mucous membrane.

So far as I know, the first one to call the marked attention of specialists to the dependence of conjunctival catarrh upon nasal and pharyngeal catarrh was Bresgen,¹ in 1881. Arlt, of Vienna, had dwelt upon the close connection between stricture and chronic inflammation of the lachrymal duct and diseases of the mucous membrane of the nose for many years in his admirable clinical hours with his students. From earliest time it has been known that, if an eye were injured, or suffered from the lodgment of a foreign body upon any of its coats, more especially upon the cornea, the first phenomenon is a one-sided "snuffle," or a sudden rhinorrhœa. This is not merely an increase of tears, because a sudden hyperæmia of the nasal mucous membrane of the same side follows. The introduction of a Eustachian catheter, in its passage over the floor of the nostril, and opposite the anterior and middle parts of the inferior turbinated bone, is immediately followed by a flow of tears from the corresponding eye; after the catheter has passed this short tract, the sensation produced by it is confined to the posterior part of the nasal strait, and is not accompanied by any ocular symptoms. This gush of tears cannot be explained by a stoppage of the nasal end of the lachrymal duct, for the tears are not conveyed with such rapidity into the duct; and, moreover, the overflow on the side of the catheter-introduction is immediately succeeded by a flow of tears from the other eye.

These and similar physiological phenomena led Bresgen, Hack, Ziem, and later, Gruening, Rumbold, Rothholz, Bosworth, etc., to observe certain ocular symptoms consequent upon nasal disease.

¹ Der Chronische Nasen u. Rachen Katarrh, 1881, Band I.

Hack's paper attracted universal attention, and, while it was at first received with quiet favor on account of its source, soon invited unsparing criticism and strong opposition from the Berlin Medical Society, where it was first presented. Hack found a large number of ocular disturbances that would not yield to proper local treatment; and, in looking about for a definite cause, found not infrequently a series of nasal symptoms, which one author¹ has grouped together under the homely phrase of "irritable nose." These symptoms were stuffiness of one or both nostrils, usually of the one corresponding to the affected eye; a catarrhal discharge; local nasal irritation, usually described as in the lower and middle parts of the nasal fossa, and inability to breathe freely through the nostril. Exploration with the nasal probe produced an engorgement of the mucous membrane of the anterior extremity of the inferior turbinated bone, and sometimes a puffing of the corresponding portion of the septum. This touching with the probe was like touching a puff-ball. It was found that the submucous cavernous tissue had undergone irritation, had become spongy, enlarged, and erectile.

The ocular disturbances physiologically produced by this manœuvre were lachrymation, fear of light, known by the term photophobia, itching of the lids, a more or less bloodshot appearance of the conjunctiva of both lid and ball, and sometimes an injection around the cornea; more or less pain accompanied these symptoms. Hack regarded these disturbances as paroxysmal and reflex. The question of reflex irritation, therefore, was not so much one of enlargement and engorgement of nasal tissue and of obstruction of the nostril, as of the remote effect upon the eye. This is also illustrated by the familiar effect of sneezing, of the sudden entrance of foreign bodies into the nose, of twitching out hairs from the nostril, etc., whose prompt effect is to suffuse the eyes with tears, and to produce ocular congestion.

It would be improper to consider the pathological disturbances of the eye, as the possible result of nasal disease, without excluding certain groups of diseases which must be regarded as determining their own manifestations; as, for instance, all forms of direct traumatism; all scrofulous and syphilitic diseases, whose import is shown quite as much in the skin, glands, teeth, etc., as in the nose or eye, and which may be expressed in one or all of these different systems simultaneously, or consecutively, without any reflex element whatever. For instance, the occurrence of a one-sided ophthalmia,

¹ Gradle, *Archives of Ophthalmology*, December, 1887, p. 391.

of necrotic ulcers of the cornea, or of an iritis, during an attack of scrofulous rhinitis, or of ozæna, or of nasal ulcers and eczema, cannot be regarded as reflex; it is also a well-known fact¹ that wounds of the cornea of the eye are very apt to become suppurative, necrotic, and perforating during the contemporary existence of an ozæna, but it is not reflex. A more intelligent view of such coincidences is that they are mutually dependent upon a central systematic cause, and their removal depends upon a persistent fight with this central lesion. It is doubtful, in such coincidences, which disease is the starting-point of the other; in fact, it is best to regard them as independent of each other, and to treat them simultaneously as symptoms of a general cause. Every physician has cases in which such a connection or coincidence exists; and in the elimination of those that have no connection with each other lie the genius of diagnosis and the success of treatment.

The pathological disturbances of the eye and face which may be regarded as belonging to the category of reflex symptoms, due to nasal disease, are as follow: lachrymation; congestion of the eye-ball and lids; floating bodies in the vitreous humor of the eye; phosphorescences in the eye; itching and scratching of the inner surface of the lids; eczema at the margin of the lids; a fulness of the lids just behind the bases of the cilia, and to be contradistinguished from the puffy œdema of albuminuria; eye-strain, or eye-tension, described by patients as if a tight band, all too short, held both eyes together, or as if a band fixed the eye in the orbit, making its motions painful; weakness of sight, known by the term *asthenopia*, the result either of a weak muscular apparatus, or of imperfect accommodation for near objects; headache, either temporal, vertical, frontal, or cervical, chiefly the two last varieties; spasm of the lids; choreic movements of the lids and eyeballs; neuralgia of the supra-orbital, infraorbital, and canine regions of the face; pain, tenderness on pressure, and swelling over the region of Highmore's fossa; functional epilepsy, manifestly due to reflex influence;² nausea and gastric disturbances; a diseased condition of the upper digestive tract; uterine disorders; genito-urinary affections; perversions of smell, taste, and hearing, as well as of sight; laryngeal cough; bronchial asthma; megrim; melancholy, etc. Since Voltolini first observed the reflex connection between nasal polypi and asthma,

¹ Rothholz, *Deutsche Medicinische Wochenschrift*, December 29, 1887, p. 1128: "Ueber die Beziehungen von Augenkrankh. zur Nasen-affectionen."

² Elsberg, *Archives of Laryngology*, 1888, iv. p. 258.

between sneezing and asthma, between sneezing and spasmodic cough, a great deal of attention has been paid to laryngeal and nasal reflexes. In 1880, Zuckerkandl, of Vienna, made a careful examination of one hundred and fifty skulls, with reference to the existence of catarrhal inflammation in the cranial sinuses. He found that the sinus, or antrum, of Highmore, is most frequently affected with catarrhal processes; after that the sphenoidal sinuses; and *least frequently of all*, the frontal sinuses.

The following cases will serve as illustrations of some of the reflexes named. They are selected from a varied array, for the emphasis of special symptoms.

A married lady of thirty years, mother of one child by a normal delivery, succeeding to a miscarriage by two years, occupation that of care of an easily-managed household, with time and inclination to cultivate herself, to a limited extent, in music and literature, enjoying otherwise good health, came to me in October, 1888, complaining of blurred vision, and floating specks chiefly in the left eye; itching and scratching of left lower lid; pain between the eyes; a cincture-band around the forehead; headache after using the eyes for sewing and reading, and on the following nights an aggravating insomnia. Correction of a hyperopic astigmatism with proper glasses brought vision to the normal, and an eye-drop of one-half per cent. of cocaine-hydrochlorate and one grain of zinc-sulphate improved the congested and granular condition of the lids. The remedies were sufficient for a time. Soon, however, the frontal ache and cincture-band, with the insomnia, asserted themselves more strongly, and my attention being directed to her nose and throat, I found a catarrhal rhinitis, chiefly of the right nostril; a deviation of the septum, partly of osseous and partly of cartilaginous tissue, into the same nostril; a puffing of the mucous membrane of the right wing of the nostril, opposite the septal malformation: the two entirely filled up the middle and superior meatuses of the nostril, but the nasal probe could be easily passed between them to the post-pharyngeal wall; the puffy alar hypertrophy was very sensitive to the touch, and fairly rough usage of the probe immediately produced a flow of tears, with a pericorneal injection of the same eye. Under the belief that cocaine ought to assist in establishing a connection between the nasal disturbances and the ocular symptoms, a four-per-cent. solution of cocaine was freely used, with the effect of a partial retraction of the alar hypertrophy, but with only slight abatement of the ocular symptoms. A systematic treatment of cocaine-spraying and pencilling was

then used, together with Dobell's solution of borax, bicarbonate of soda, carbolic acid, and glycerin, with considerable relief of the nasal sensitiveness and of the ocular symptoms. It was not, however, until the osseo-cartilaginous spur was freely removed with a saw, that freedom from distressing symptoms could be asserted. This was done with a ten-per-cent. solution of cocaine, applied for fifteen minutes with a camel's-hair pencil, and on a cotton probe. The sawing was with an upward movement, and brought away quite a large triangular spur of the septum. Frontal and ocular symptoms disappeared, followed by complete absence of insomnia.

This case may be regarded as a fair example of distinct nasal and ocular diseases, at once dependent upon, and independent of, each other. The refractive error of hyperopia was certainly distinct from the nasal disease; and, following the law of such optical anomalies, it was due to an anatomical defect of the eyes. But its careful correction did not relieve the patient of the reflex ocular symptoms, whose origin was in the nose, and which finally disappeared with a removal of the offending nasal obstructions. In the simpler forms of nasal mucous-membrane hypertrophy a resort to operative procedures is usually unnecessary. Cocaine, in a two- or four-per-cent. solution, when well borne, with Dobell's spray, or Seiler's antiseptic pastilles, and, if necessary, chromic acid as a caustic application, will in a large number of cases suffice to effect a cure. As to operative procedures, it is to be remembered that the nostrils are not symmetrical in two-thirds of all the cases, and that not every deviated septum is to be "shaved off," or "sawn off." The practice of "rifle-boring" a nostril, or making it as "clean as a gun-barrel," is to be condemned. It is to be borne in mind that the nose receives the first air that is destined to pass into the lower respiratory organs; and sufficient area is needed in either nostril to allow of its free passage, otherwise the mouth must be opened to assist in respiration, and thereby the faulty habit of mouth-breathing will be acquired; it is also to be borne in mind that the nose is the organ of smell, and destruction of excessive nasal tissue, especially of that of the bony septum, is not in the line of good surgery, on account of its interference with this function.

Another case is as follows: A man of forty years, of large physique and bony frame, never having had syphilis, and apparently in perfect health, by occupation a teller in a bank in the northern part of this State, had suffered for some years from conjunctival catarrh of both eyes, and had worn glasses with the idea of relieving eye-strain while at work upon the books. He was a

mouth-breather, with enlarged tonsils, chronic follicular pharyngitis, false noises heard in both ears, slightly but not noticeably deaf, had central frontal headache, especially at the close of the day's work; in addition, he had hay fever for a limited time during the summer. Cocaine in weak solution had been used upon his eyes, giving temporary relief. Having fallen into good hands, he found himself the unfortunate possessor of "sensitive areas" in each nostril, which had been touched with the red-hot platinum wire. I found that, though there was an improvement in the size of the nasal straits by the removal of the alar hypertrophies, there remained a large deviated septum into the left nostril, which, at its middle and posterior parts, was sensitive to the touch of the probe, and somewhat puffy. Under thorough local anæsthesia this was sawn from below upward with some difficulty, and the major part of the obstruction was removed. The result has been a return to normal breathing by the nose, an abeyance of the false aural sounds and of the stuffy feeling of the ear, eye-tension and discomfort have disappeared, and glasses have been laid aside.

I shall cite one more case of perhaps greater dental interest, wherein relief failed to come by means of the methods heretofore indicated, and then close these observations upon this interesting topic.

A New York merchant of nearly thirty years of age, whose father is engaged in large manufacturing interests, and who himself was engaged in buying raw materials, in office-work, and in shaping national legislation in regard to import duties, whose duties, therefore, were varied and responsible, but not specially trying to his eyes, was sent to me in January, 1887, by a dentist, with a history, concisely stated, as follows: Patient had had intermittent pain in the fifth pair of nerves, chiefly over the superior dental nerve, and in the canine fossa, running up through the superior lateral incisor teeth; this pain was now on one side and now on the other; bilateral temporal pain and discomfort, chiefly over the right temple, on which side was chiefly located the canine pain; pain behind both eyeballs. In March, 1886, he fell twenty feet in the gymnasium of one of the athletic clubs of the city, and broke off both lateral incisors of the upper right side, and injured the nose, though no fracture, not even of a cartilage, of the nose was found. The teeth were beautifully crowned with porcelain, backed by gold, so that the fractures were not perceptible to ordinary observation; he had a catarrhal conjunctivitis, granular and dry; asthenopia, with the slightest use of his eyes for the near; occa-

sional insomnia; frontal headache; no appetite for breakfast, and was melancholy; he had never had rheumatism nor syphilis; did not drink, and retired early. He had been under treatment by several oculists, and had been observed by several dentists. Just before coming to me he had been under the care of a skilful oculist, who found occasion to interfere with the nares by repeated cauterization of the nasal mucous membrane. A weak lens had been worn, but the patient complained of its interference, and that it gave him no relief. Early in 1886, nausea and gastric disturbances were relieved by an astigmatic lens, but the astigmatism had disappeared, while the headaches had grown worse. On examination, I found the chief objective symptom to be the conjunctivitis; the nasal fossæ were amply large, and had no unusual discharge; the canine reflexes were intermittent, and shifting from one side to the other; and the teeth were, without exception, in perfect order. No glasses improved the vision, which for distance was perfect, and I looked upon the patient as suffering from invalidism, due to nervous reflexes, and treated him chiefly on general principles. Aside from a mild local astringent to the lids, his *régime* was a change in diet, more devotion to social pleasures, a trip to Washington, followed by ten days at the carnival in Montreal, etc. During these diversions he was much better as to the ocular symptoms, especially as to the bulbar pain, and his appetite returned. This improvement lasted for about two months, when the symptoms above mentioned recurred, and he sought other sources of relief. I have authentically learned since that a distinguished oculist had made a partial tenotomy of the internal rectus muscle of each eye, and that the patient was free from the incubus of nervous reflexes and had gained thirty pounds in weight.

This case is introduced to show the possibility of dental, nasal, and ocular reflexes concurring, and the elements in doubt in making an eliminative diagnosis. It further affords an illustration of the doctrine of the "survival of the fittest."

Before closing this paper, I desire to call attention to the dangers of overestimating reflex disturbances. That they exist, and that they are local expressions of a nerve disturbance, as suggested here of the fifth pair of nerves, cannot be denied. But that they are the necessary initial step of a future neurosis, such as chorea, epilepsy, or paralysis, is not true. It is always easy for the specialist to find symptoms that conform to a new and attractive theory of pathological phenomena; for new theories present

an air of diversion and relief that is always refreshing. In the special subject under consideration, as in all references to nervous phenomena, it is a safe rule to keep before us the necessity of the healthy nutrition, both physical and moral, of the nervous system of our patients.

A NEW METHOD FOR THE TREATMENT OF FRACTURES OF THE MAXILLÆ.

BY EDWARD H. ANGLE, D.D.S., MINNEAPOLIS.

MUSCULAR contraction is a most difficult obstacle to overcome in reducing and maintaining in proper apposition most fractured bones. This force, especially in the femur and patella, is so difficult to antagonize that probably the ideal or normal result is never attained.

In fractures of the inferior maxilla it is also a most difficult obstacle in the way of maintaining perfect apposition of the parts, and should always be carefully considered in the construction of an appliance for this purpose. This difficulty is intensified by the large number of movements to which the human jaw is susceptible, and the great number of causes which contribute to their production. That others have recognized the difficulties to be overcome in the treatment of fractures is evinced by the large number of devices and appliances which have been recommended for the purpose.

The methods used by myself in treating fractures of the maxillæ have been so successful and so gratifying that it would seem they approach for efficiency and simplicity more nearly the ideal than any yet devised.

In order that this system of treating fractures of the maxillary bones may be more easily understood, I will divide them into three classes. The first class comprises all simple fractures in which the teeth are good and sufficiently firm in their attachments (especially on each side of the fracture) to afford anchorage for the appliance.

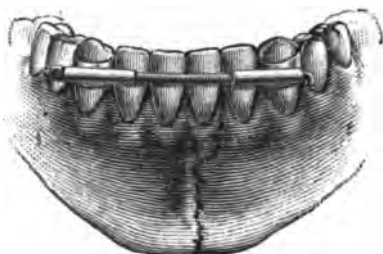
The second class comprises all fractures where the teeth are unsuited, from disease or any other cause, for anchorage, but yet sufficient to give the correct articulation of the jaws.

The third class comprises all fractures where the jaws are

edentulous. The following cases treated by myself will enable the reader to comprehend the method peculiar to each class :

Case No. 1 will illustrate Class No. 1. May 29, 1889, Nels Parsons, aged twenty-one, was admitted to the Saint Anthony Hospital of this city. He had fallen from a pile of lumber, a distance of fifteen or twenty feet, and, besides severe bruises, suffered a simple fracture through the symphysis, terminating, however, in front between the central and lateral on the left side, as shown by the line in the engraving, Fig. 1. Upon examination, I found the fractured bone

FIG. 1.



was quite widely separated at the top, and the left central incisor was loosened. The following treatment was adopted : The ends of the fractured bones were placed in their proper position and temporarily fastened by lacing the teeth with silk ligatures.

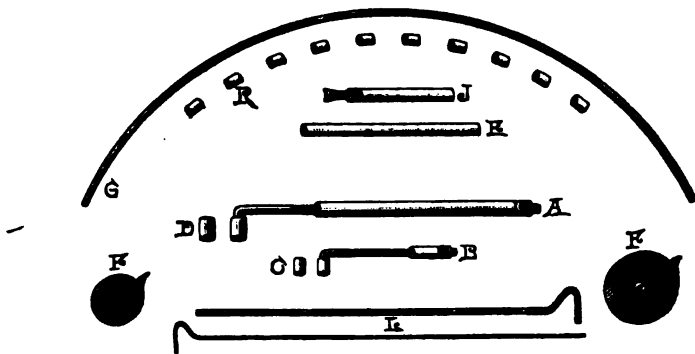
Bands of very thin German silver were made to encircle and accurately fit the cuspid teeth. A small tube of German silver, one-half inch in length, was soldered to each band and in exact alignment ; a piece of wire accurately fitting the bore of these tubes, bent at right angles at one end and having a screw cut upon the other end, was slipped through each tube and secured therein by adjusting a nut on the screw. The bands were cemented in position upon the teeth by means of oxyphosphate cement, as shown in Fig. 1.

After the cement had become thoroughly set, the nut was then tightened until the fractured ends of the bone were drawn snugly together.

The appliance was worn without displacement or trouble for twenty-one days, when it was removed, the bone having become firmly united. I may add that, during the time the appliance was worn, so firmly was the jaw supported, the patient suffered little if any inconvenience, and after the third day partook regularly of his meals, using his jaw freely, but of course avoided the hardest

particles of food. After removing the appliance a careful impression of the jaw was taken, a model made, and the appliance transferred to the model, exactly as shown in the engraving. The lower part of the jaw is, of course, diagrammatic, and was added by the engraver to show the line of fracture.

It should be borne in mind that the principle upon which this appliance is based is not the same as when the teeth are simply wired together, but very different; for, in wiring, the upper parts of the fracture only are tipped or drawn together, and no pressure or support is given to the lower parts; while in the method here shown it will be seen that, by reason of the bands and pipes being rigidly attached to the anchor teeth, tipping is impossible, and pressure is exerted equally upon both parts (upper and lower) of the fracture as they are drawn together by the screw; or, as my friend, Dr. Charles G. Brown (who first suggested to me this use of the screw), puts it, "It is a Malgaigne splint, if you please, except that the hooks are not foreign bodies."

FIG. 2.¹

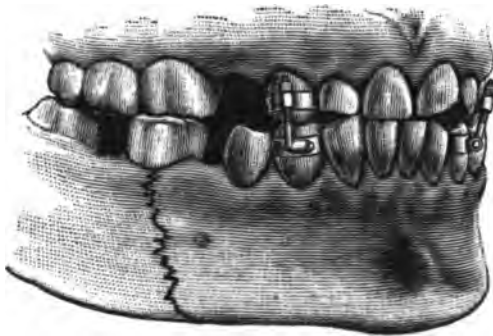
This device may be applied in any locality in either jaw, provided suitable teeth for anchorage be not too remote from line of fracture. The screw may be bent to accommodate the curve in the arch, should the fracture occur in the region of the cuspid.

The treatment for cases of the second class is illustrated in Case No. 2. On July 4, 1889, William Fraley, aged forty-five, was ad-

¹ These bands, tubes, wires, screws, and nuts are some of the appliances known as "Angle's Regulating and Retaining Appliances," devised and used for the purpose of correcting irregularities of the teeth. They may be made by any ingenious dentist, or procured from any dealer in dental goods.

mitted to the Minneapolis City Hospital. A blow from a policeman's club had produced two simple fractures of the inferior maxilla. The first was an oblique fracture of the right side, beginning with the socket of the second bicuspid, extending downward and backward, involving the socket of the first molar, breaking out the second bicuspid and greatly loosening the first molar. The second molar had been lost years before, while the third, as well as the remaining teeth, were much abraded and loosened by salivary calculus, thus making the application of the appliance described in Case No. 1 impossible. The second fracture was situated on the opposite side, high up in the ramus. Because of swollen condition of the parts, I could not detect the exact line of fracture, but the grinding of the ends of the bone and the great pain occasioned thereby were unmistakable evidences of a fracture. The patient, as in all such cases, was unable to close the jaws. The fracture on the right side was widely separated, and the anterior piece much depressed by reason of the contraction of the depressor muscles, while the posterior piece of bone was drawn firmly up, the molar

FIG. 8.



teeth occluding. (See Fig. 3.) The following treatment was used: Bands were made to encircle all four of the cuspid teeth, they being the most firmly attached in their sockets. The fractured ends of the bones were placed in apposition, the lower jaw closed carefully. The occlusion of the lower teeth upon the upper required so considerable force and occasioned so much pain that it became necessary to anesthetize the patient. Points on the bands for the necessary attachments were carefully noted. The bands were then slipped off the teeth, and little pipes (shown at *c*, Fig. 2) soldered at the necessary points, after which the bands were cemented in their

proper positions upon the teeth, and two small traction screw-wires, the same as shown at *b*, Fig. 2, were slipped into the pipes. The jaws were closed and the nuts tightened on the screws, until the jaws were drawn firmly together, and each tooth occupied its exact position in occluding upon its fellow of the opposite jaw. Both fractures were then carefully examined and found to be in perfect apposition, and presented the appearance shown in Fig. 3. The most natural position for the jaw and the muscles had been secured, thus placing the parts in their natural position of relaxation and rest.

During an attack of coughing in the night following, one of the bands was wrenched loose, but was replaced the next day without trouble. No further accidents occurred. The patient readily took nourishment through the spaces between the teeth. Thus the fractured jaw was firmly supported without the least motion for twenty-two days, when the appliance was removed, showing most excellent results.

The patient was a great lover of the clay pipe, which accounts for the much-worn condition of the incisors.

The following case possesses several points of special interest, although the fractures occurred in regions similar to the case just described, and the appliances, though involving similar mechanical principles, will be found to be greatly simplified.

December 28, Thomas Brennan was admitted to the Dental Infirmary of the University of Minnesota, suffering from the effects of a blow received on the left side of the jaw from a cant hook while working in a lumber camp in Wisconsin, which produced fracture of the jaw in two places. The first fracture was on the left side, beginning between the first and second bicusps, and extending downward and backward, and involving the lower part of the anterior root of the first molar. The second fracture was on the right side directly through the angle of the jaw. The fractures had occurred thirty-two days previous to his admission to the infirmary, during which time nothing had been done to reduce them. He reported that he had called upon a physician, who supposed the trouble was merely an abscessed tooth, and had lanced the gum with the view of reducing the swelling. Later the patient had called upon a dentist in one of the smaller towns, who also failed to diagnosticate the fracture, and extracted both bicusps in the hope of giving relief.

Upon examination, I found considerable swelling in the region of this fracture, with the usual result: the patient being unable to

close his mouth by reason of the anterior piece of the fractured bone being drawn down by the contraction of the depressor muscles. A false joint had also become established, and the bones could be easily worked without causing pain.

At the point of fracture, on the right side, there was little or no displacement; the swelling was also slight. With the assistance of

FIG. 4.

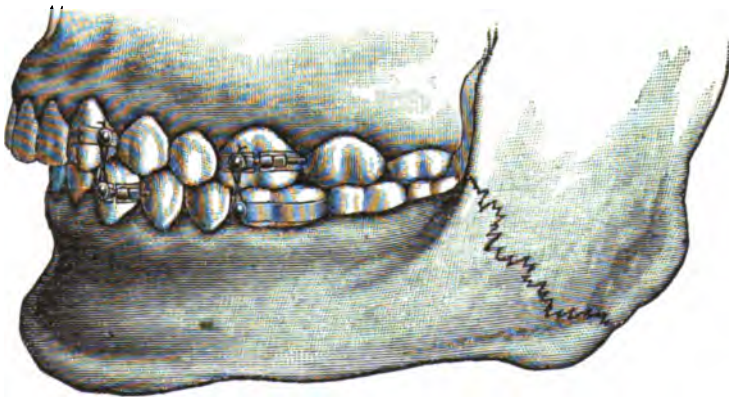


Professor Leonard the patient was anæsthetized; the ends of the bones were then rubbed forcibly together with the view of breaking up the false attachments and stimulating activity in repair.

The ends of the bones were now placed in perfect apposition, and the jaw closed, taking great care to articulate the teeth in their correct position against the upper ones.

The jaw was now firmly bound in this position to the upper teeth, in the same manner as described in Case No. 2, with this

FIG. 5.



difference, that the method was improved upon and simplified by using clasp bands, as shown in Fig. 4.

No cement was used, and, instead of the screws, small metallic buttons were soldered to the sides of the bands (as shown in the cut), around which fine binding wire was wrapt in the form of a figure 8. (See Fig. 5.)

The bands seen upon the molar teeth in the engraving were

not used in this case, but are shown for the purpose of illustrating how they may be used in cases of comminuted fracture. At the end of seventeen days the bands were removed and the patient discharged, the bone having been firmly united.

It might be urged as an argument against this method that, the teeth being closed and the jaws being firmly bound together, the patient would be unable to take sufficient nourishment. It, however, rarely happens that a patient is found without some teeth missing, thereby leaving abundance of space for the passage of the liquid foods, and even if all the teeth are sound and in perfect position, it has been proved that there is plenty of space between the teeth and behind the molars and between the upper and lower incisors for taking all nourishment necessary. In such cases more time would be consumed in taking nourishment, but this obstacle is compensated for by the main points of advantage in its favor, such as cleanliness and greater comfort to the patient, as compared with the many bulky and awkward appliances in use.

Third, its extreme simplicity enables any one with ordinary mechanical ability, when provided with a set of clamp bands, to easily and quickly set all ordinary cases of fracture.

And, lastly, the certainty of correct results will, I think, be sufficient reasons for all those who are interested in this branch of surgery to give it a trial.

Class No. 3, comprising fractures of edentulous jaws, are fortunately very rare. The method of treatment I propose is similar in principle to that already described in Class No. 1, except that in place of the teeth small bone hooks are used, drilling for their reception a suitable cavity on each side of the fracture comparing in position to the original sockets of the teeth, the same as if the operation of implanting teeth was intended; the cavities thus made need not be nearly so large or deep. They should also be drilled obliquely to correspond to the course taken by the hooks. The hooks before insertion should of course be made antiseptic.

ORAL SURGERY CLINIC.—MERCY HOSPITAL, CHICAGO.

SERVICE OF PROFESSOR JOHN S. MARSHALL, M.D., BEFORE THE CLASS
OF THE UNIVERSITY DENTAL COLLEGE.¹

THE patient before you, gentlemen, is thirty-eight years old, and the mother of five little children. She is here for treatment of extensive necrosis of the inferior maxillary bone. The odor emitted from the dead bone is almost intolerable, as no doubt your olfactories have already discovered. The patient brings a letter from her doctor, which details briefly the history of the case, and is as follows:

Eleven months ago patient was suffering from an abscessed bicuspid tooth in the inferior maxilla of the right side, which had progressed so far as to open externally under the jaw. Poultices were applied, and later the tooth was extracted. Patient was at this time in the eighth month of gestation.

The external opening soon after closed and remained so for a few weeks, when it again began to discharge. Necrosis of the jaw was then diagnosed and several loose teeth upon the right side were extracted. The disease has steadily progressed until it is feared the entire bone is involved from the temporo-maxillary articulation of the right side to a corresponding point upon the other. No operation had been permitted by the patient save the extraction of the teeth as they became loosened; the only one now remaining is the wisdom tooth of the right side. The patient is now well anesthetized, but we shall have to proceed carefully on account of her extreme weakness. Her pulse yesterday was 130; temperature, 100°; respiration, 24.

Stimulants have been administered to brace her for the operation.

The bandages are now removed, and you will discover that the soft tissues, including the chin and anterior portion of the floor of the mouth, the skin of the neck from the angle of the jaw upon one side to a like point upon the other and downward to the cricoid cartilage, and all the muscles having attachment to the inner surface and lower border of the jaw, have sloughed from the bone, so that nearly the entire hand can be passed through the opening

¹ Reported for the INTERNATIONAL DENTAL JOURNAL.

into the mouth. *The submaxillary glands are also exposed. Articulate speech is impossible, and all her communications have been made for some weeks by writing.

We will now proceed to examine the extent of the necrosed bone. On the right side it has progressed seemingly to about half an inch above the angle and extends to the temporo-maxillary articulation of the left side. The body of the bone is fractured on a line with the first molar tooth, and it is reasonable to presume this was a natural separation of the sequestrum.

The removal of the inferior maxillary bone, entire or in great part, is not a common operation, and is rarely justifiable except in cases of malignant disease, large tumors, or when the bone has died *en masse*, as in the case before you. The operation will cause great disfigurement, but when the life of the individual is at stake, this becomes a matter of minor importance.

We are by no means confident of a favorable prognosis in the case, as the patient is very weak and anæmic. The possibility of a fatal issue has been explained to her and to her husband, but, as it is certain that she cannot live long in this condition, they are both anxious for the chance of life which may come from the removal of the diseased jaw.

The usual method for an operation of this magnitude is to make an incision along the lower margin of the jaw and chin and divide the lower lip upon the median line. The first incision is not necessary, on account of the loss of so much tissue beneath the jaw. We therefore divide the lip and secure the vessels; we find no connection of the soft tissues with the bone as far back as the angle upon the right side, and well up on the ramus of the left side; with the periosteotome we strip the remaining portions of the periosteum from the ramus and coronoid process, and the bone is now ready to be disarticulated. We seize the ramus with strong forceps and carry the bone backward and outward, the capsular ligament gives way, and the bone is removed. Hemorrhage is very slight, not a single vessel requiring to be ligatured. This is very fortunate, and quite different from what we anticipated.

Examination of the remaining portion of the jaw of the right side makes it necessary to remove a considerable piece of the ramus; this we will do by dissecting the periosteum from the bone, and with the chain-saw and bone-cutting forceps cut it away. It will be necessary, however, to wait a little before proceeding with the operation, as the pulse and respirations indicate the need of stimulants.

The patient having sufficiently rallied to permit the progress of the operation, we proceed, and find, on cutting away this portion of the ramus, that a large pus-pocket has formed in the cancellated structure of the bone. We will, therefore, scrape away with the curette all diseased bone; this being accomplished, and the wound thoroughly irrigated with a five-per-cent. carbolic-acid solution, we will clip away all gangrenous-looking tissue from the edges of the ulcer and scrape away all necrotic material from the deeper portions, and again thoroughly irrigate the parts. The lower lip must now be united; this we will do by two deep sutures, one at the upper margin and the other at the lower, and two superficial ones in the vermillion border.

A suture must now be passed through the tip of the tongue, and this organ drawn well forward and secured by tying the ends of the suture around the neck to prevent the tongue from falling backward into the fauces and causing suffocation. The wound will now be dressed with iodoform and antiseptic gauze and changed every few hours.

Stimulants and nourishing liquid food will be the after-treatment, and if she is unable to swallow food it must be given by the œsophageal tube. The patient has passed through the operation with less shock than we expected, which leads us to hope that if no complications arise she may possibly recover.

DENTAL EDUCATION.¹

BY C. STODDARD SMITH, D.D.S.

TIME was when the seeker after dental knowledge, upon the payment in lawful money of one hundred or two hundred dollars to a so-called preceptor, could be assured of a complete initiation into the mechanisms, mysteries, and secrets of the dental art in the space of a few short weeks, or months at furthest. Peeping through the crack of the laboratory door, he watched his preceptor as he mixed and inserted the "royal mineral succedaneum" (as the quacks of that day denominated amalgam), or "plugged" the carious molar with "gold leaf," introduced by smooth-bore instruments, or

¹ Read before the Chicago Dental Club, March 24, 1890.

fixed the key on the dental organ which had ached. Secure in the private recesses of the laboratory, with doors closed so that the prying and non-paying world should not share in his good fortune, he became acquainted with the mysteries of wax impressions, casts, dies, and soldering lamps. It was generally believed that the greatest effort and skill was required to master the secret processes of what is now somewhat pedantically denominated prothetic or prosthetic dentistry, while the art of saving the natural teeth was very easily acquired. To be sure, the student had to absorb and assimilate the fact that arsenic would "pizen" nerves; but contour fillings were an unknown quantity, and "gum-biles" were a pathological condition beyond the reach of the therapeutical knowledge of those by-gone days. A few plain excavators and pluggers, a key, a pair or two of clumsy forceps, a book of gold, and a pound or so of amalgam, with a scant outfit for making metal plates, and possibly a rolling-mill, comprised the stock in trade of the most progressive dentist. Yet I have seen gold plates made by a dentist of that period that for fit and workmanship would equal any, and far surpass nineteen-twentieths of the work of later years.

But that day has long since passed. Dentistry has outgrown and cast off its swaddling-clothes, passed through the period of adolescence, and emerged into the arena of a recognized profession.

Dental education in its modern phases is the subject we have before us for consideration this evening. What should it be, and how should it best be accomplished?

The dental student of to-day is easily resolvable, in origin, to one of two classes. The country youth, to whom a dollar resembles a cart-wheel in size, having discovered that he has just a little hole in one of his teeth, visits the village dentist, and is informed that there are a dozen cavities; and the amount of the bill, and the apparent ease with which the money is secured by the dentist, lead the patient to believe that a dental office is a "heap better than a farm," or "tending store," and is, in fact, a veritable bonanza, a soft snap, a philosopher's stone, or a Midas touch, which shall literally turn base metal to gold, and gold into greenbacks with about one thousand per cent. profit. He casts longing eyes on the environment of the practitioner, wonders how long it would take him to "learn the trade," and soon determines to reach the wished-for goal, or die in the attempt. Another class is composed of the sons of well-to-do and ambitious parents, who, like the

country youth, have been led to believe that the main work of the dentist is to take care of the money as it comes in; that the business is genteel as well as lucrative; and that it requires little time to learn it or capital to set up in it. The aspiring father sees in dentistry the short line to success, position, emolument, and most likely affluence for his offspring.

From both of these classes, as well as from other sources, come the rank and file of dental students to-day. But from whatever source they come, whatever motives actuate them, they one and all utter and re-utter the self-same query, "What is the least possible time and the smallest amount of money which it is necessary for me to devote before I can emerge a legitimate practitioner, and share in these golden rewards?"

Dental laws in nearly all the States have made it necessary that some sort of education shall be obtained; at least, that a diploma must be secured. These laws might with propriety have been entitled laws to promote the organization and operation of dental colleges. Certainly their effect has been to vastly multiply the number at least of these institutions. Armed with a diploma from one of them, the student possesses the "open sesame" to the mine of wealth he thinks he is about to put his pick into. He can defy examining boards, and by putting out his shingle with a D.D.S. attachment easily secure the prize.

Though the mallet has done much in private practice to bring the student from behind the laboratory door, and enable him to view the actual operation of filling, yet the patient objects to his presence as a rule, and the various pathological conditions, the proper formation of cavities, and many other matters are nearly as far from his reach and observation as ever. Few patients will allow him to operate, even in the simplest cases. Further, few preceptors have the ability, the gift, or the time to teach the student, even had they the desire; and in many cases their main idea is to obtain as much in the way of service as is possible, with as little of effort on their part as may be. The dental college, properly officered, equipped, and conducted, changes all this. From the moment the student enters its doors he is in possession of facilities and advantages which years of private pupilage could never afford him. He has systematic and thorough instruction by didactic lectures; he has skilled instructors ever ready to encourage and aid his efforts, and to show him what to do and how to do it; he has patients awaiting his manipulations, who come with the expectation of such comparatively unskilled service. If studious, industrious, and energetic

in using his opportunities, he can learn more in six months than he possibly could in two years under any preceptor, no matter how willing or competent to teach.

The dental college, then, must be regarded as the chief educational agency of the dental profession. It must, of course, be supplemented by text-books, and if then is added the advantage of a private preceptorship, so much the better. When a man starts out in business of any kind, he naturally seeks to secure that which he must have as his stock in trade where he can obtain it to the best advantage. The dental student, whose dental knowledge is to be his stock in trade, is no exception, and, recognizing the soundness of the above conclusions, he seeks the dental college naturally and unavoidably. If we trace his career through these institutions, see what he actually does, or tries to do, what he accomplishes, and how he is equipped for his chosen profession when he emerges, we may, by comparing the actual process with an ideal one, be able to arrive at a conclusion as to whether dental education, as now conducted, is what it ought to be or what it might be.

All dental colleges of repute profess to require a preliminary examination in English branches. In other words, it is assumed that a man who is to occupy a professional position should be possessed of a common-school education at least, and have an intelligent knowledge of common branches. It ought, at least, to be understood that he will be required to show a decent knowledge of what the backwoods school-director termed "the three R's," to wit, "readin' 'ritin', and 'rithmetic," and it might not be too much to require a rudimentary knowledge of "spellin'" as well. But in how many colleges may we suppose this requirement to be anything more than a hollow mockery? Since this paper was begun the writer had it direct from a matriculate of a college which claims to stand high, that no examination whatever was required of him. It is probably the case, in at least a great many instances, that the process of matriculation consists of the transferring of a "V" from the pocket of the candidate to that of the dean, and the inscribing of the name of the applicant upon the roll of matriculates, unaccompanied by any such formalities as finding out whether the student knows anything whatever.

We will suppose that the student is "green," and enters at the fall term. He is at once plunged into an atmosphere entirely unknown to him. He hears terms of which he knows not the meaning, allusions and descriptions which he does not understand; he gets a dose of one or two subjects in the morning and of one

or two more in the evening, with an intermediate admixture of practical operations of some sort. What wonder, then, if at the end of three months he becomes confused and bewildered? Education, in its literal and proper sense, means a drawing out,—an attempt to evolve or bring out the capacities of the individual. Dental education, as now conducted, seems to be largely a pouring in or a filling up process. It begins in this manner and it continues on this line to the end, and too often, we fear, the attempt is made to pour in too fast, if not too much. The two terms of five or six months each is far too short a time to teach thoroughly all that is attempted in the curriculum of the principal dental colleges of to-day. It is not possible that the average student should in that brief time obtain more than a smattering of the many branches. It is well, therefore, and we regard it as a great step in advance, that this time is to be lengthened to three years. And when we say three years, we mean thirty-six months of solar time, and not three years of five or six months each. That surely is none too long to gain even a superficial knowledge of all these subjects. All honor to those men who have worked to effect this end, whose efforts have at last set the date when this reform is to go into effect; and now let every individual member of the profession endorse and sustain it by refusing to receive any student who will not pledge himself to spend this length of time; and let every State Board enforce it—as they have the power to do—by refusing to recognize any college as reputable which does not require it, or to admit to an examination any candidate who cannot show satisfactory proofs that he has studied for three years. Both of these things the Illinois State Board has done, but, so far as we know, no other Board has done so.

This is, however, a digression; we were discussing dental education as it is. The attempt to teach all branches during a six-months' term is a baneful effort to cram the student. The graded course, in which the studies of the first and second year are separated, is a great advantage, and should be generally adopted, as it is now by many or perhaps most of the better colleges. But, notwithstanding this, there is, we fear, a constant attempt to do too much. It is quite impossible to make a pint measure hold a quart. It is equally impossible to make complete anatomists and chemists and therapeutists and metallurgists and physiologists and microscopists out of a class of average students,—that is, to make *all* of them thorough in *all* these branches. Yet each professor goes to work as if his object was to make a specialist in his particular line. He

seems to forget that he is but the part of a whole. Whether dentistry is a specialty of medicine or not, is a question foreign to this paper. The attempt to make it such by first demanding an M.D. degree has not been successful, and is not likely to be. Nor is the attempt to carry the instruction in purely medical and theoretical branches to an extreme, as it is my opinion is too often done, likely to be any more of a success. The student enters upon his second year face to face with the fact that he must master the remaining branches, or fail to secure his coveted prize. He *must* fit himself for the dreaded examinations. To this all his efforts are bent. He plunges into the vortex overwhelmed by misgivings, and it is then that the cramming process begins in earnest. As the time for the dread ordeal approaches, he is treated like the Christmas turkey, whose neck is stretched to stuff his crop with grain by the forcing process, rammed down with a ramrod, irrespective of the fact that the pabulum of the previous day or week lies undigested and unassimilated. He finds that he cannot possibly do all that is required of him. He *must* neglect something. He manages to get in the required fillings, and his practical artificial case, in some way, but that examination ever haunts him as a spectre. Unless he shall succeed in passing it, he cannot go forth with his degree. The result is that he emerges accredited to the world as skilled and competent, when really his practical knowledge is that of the merest tyro. He bears the insignia of competency, but really he is entirely unprepared to grapple with the actual demands of practice. He begins at once to learn at the expense of the unfortunate public who may fall into his hands what he should have been taught while in college. He has learned imperfectly, and in many cases very indifferently, how to master the ordinary office practice; how to make a good gold filling, the *sine qua non* of successful practice; and as to the so-called prosthetic dentistry, he is in very many cases an utter failure, especially as to the despised but much-called-for rubber plates. In extracting teeth he is probably a butcher. In the very essential matter of dealing with the public, of conducting a practice, he has most likely never had any instruction whatever. He has to pay well in time and money for teaching which he supposed was to make him a dentist, but the tendency of which has all the time been to make a specialist of him. In this attempt there is no probability of any considerable success. If a man is to be a chemist or a microscopist, he will find that what he learns in the dental college is merely rudimentary after all.

This tendency of the teaching of the day is not peculiar to dental education. It is found in our common schools and literary colleges as well. The pupil in our common schools is taught a little English, a little German, a little music, a little clay-modelling, a little of this, and a little of that, with the result that of any of these branches only the merest smattering is obtained; not enough to be of the least practical use in the business of life, and meantime the time which should have been spent in developing the powers and making progress in the common English branches is frittered away, and the pupil ends his school-days with no specialty at all mastered, and with a painfully imperfect knowledge of reading, spelling, grammar, arithmetic, and the common and practical things he will need to know and to use in order to fill his place in life. If he aspires to a higher education, he perhaps spends his time on Greek and Latin and Calculus, the result being that, although bearing the degree of A.M., he is forced to earn his living by some ordinary and perhaps subordinate occupation.

“For many a man comes home from school,
A Greek and Latin, Hebrew fool.”

Let us not be misunderstood. We do not decry or belittle education. We respect and admire it. We wish to have every man who is attempting to get it get all that he possibly can, on all subjects. Let him imbibe from the fountain of knowledge to his full capacity. But what we *are* contending for is that an education looking towards an object should be practical in its relation to that object. It is supposed that the object of dental education is to make *dentists*; not specialists of some sort or other. Therefore all his teaching should be mainly directed towards making a *dentist* of him. Let him learn as much more as his capacities, time, and opportunities will admit; but unless he succeeds in making a dentist of himself, his dental education must be a failure, no matter how much he may know of special branches. Much as we may magnify the profession of dentistry, the fact remains that nine-tenths of its practice is almost wholly mechanical. Anatomy and pathology and therapeutics, of course, are necessary branches; but dentists, as such, do not need to spend time on more than their main principles and the details which are connected with dental practice; when we come to simmer it down, the pathological conditions with which the dentist ordinarily has to deal are comparatively simple, and their treatment is equally so. The polychrests which he really needs in his *materia medica* are quite few in number, and all the

multiplication of new remedies seems to amount practically to very little. If the specialists in dental therapeutics and *materia medica* will bring forth a certain and unobjectionable remedy for sensitive dentine, and inaugurate an era of really painless dentistry, they will accomplish more for the dentist and the public than in fifty years of research to secure some new and original and probably expensive substance with which to do what has for decades been as well and successfully done with old and tried remedies as it can well be.

Then, again, microscopy is a very interesting and instructive science. It should be taught in every dental college. But can a dental student profitably spend days or weeks of the precious time of his course in making sections of liver and lung and vegetables? A dozen illustrated lectures (such as Dr. Sudduth can give) will teach him more that he really needs to know, and in a more effective manner, very likely, than he could be taught by making sections without number.

Our main plea is, therefore, that dental education should consist more of practical teaching and practical work. More of this, and *no less* of theory than heretofore, we would gladly say. But life is short, and so is the time allotted to preparing for the great work of life. The struggle for existence is ever present. Capacity, time, and means, all are often limited, and if the result is that one or the other must be sacrificed, let us cut off the theoretical and stick to the practical.

As it appears to us, one great defect of even the most pretentious of dental colleges is a lack of a proper number of chairs, and also of demonstrators. In one college which professes to have considerably over two hundred students there are fifty chairs, and hardly six demonstrators. If the two hundred students are studying dentistry, it is to be supposed that they should have the use of chairs. The proportion of chairs to students named would give each student a chair once in three to four days, or an opportunity to perform thirty to thirty-five operations in a term. If some of them were juniors and not allowed to operate, the number might be increased to fifty or possibly sixty. But we submit that this is far too small a portion of the time to be devoted to practical operations. And as to demonstrators, it is perfectly plain to any one that knows anything about it that eight chairs are more than the average demonstrator can attend to properly. Yet it is believed that the facilities named are as good as any, and very likely exceptionally good. This is all wrong. If the college desires to do

its duty by the student, it will provide such clinical facilities as will enable him to properly acquire the skill which he must have to sustain himself in practice.

But time would fail were we to enumerate the defects of the actual and the requirements of the ideal dental education. The subject is only outlined here.

In conclusion, let us utter one more word of caution, lest the purport of this paper be misunderstood. It is the attainment of but few to become eminent in more than one department of life. To develop all that there is in a man, and direct it in one line of action, is all that can ordinarily be hoped for. Let those who control the educational institutions of the profession ever remember that their object should be to make *dentists*; to send out men competent in diagnosis, thorough and skilful in manipulation, kind and sympathetic in their bearing towards their patients, able to command the respect and confidence of the community. Let this be their object, and not the inculcation of some special fad; and let the student be made to feel that this is the case, and not that he is liable to be despoiled of his time and money and then either plucked and cast adrift because he fails to grasp some technicality, or else turned loose with a meagre equipment for the struggle which in most cases will confront him. He will then, if he has the right stuff in him, feel encouraged to put forth his best efforts, and be far more likely to succeed. Let the standard be never so high, but let it not be the case that the real and the practical is lost sight of in a fruitless effort to grasp the ideal.

Reports of Society Meetings.

CHICAGO DENTAL CLUB.¹

THE monthly meeting of the Chicago Dental Club was held on Monday evening, March 24, 1890, the President, Dr. A. E. Matteson, in the chair.

Drs. J. H. Martin, J. W. Slonaker, Marvin E. Smith, and M. A. Newman were elected members, and, after some miscellaneous and routine business, the subject of the evening was opened by the reading of a paper, by Dr. C. Stoddard Smith, on "Dental Education." (For paper, see page 339).

The subject being declared open for discussion, Dr. E. L. Clifford said,—

MR. PRESIDENT AND GENTLEMEN,—It has been our privilege, this evening, to listen to one of the most practical, most substantial, and, I may say, one of the most instructive papers that has been placed on the programme of our monthly meetings for some time. It is not necessary to say interesting, in speaking of such an effort upon such a subject, for does it not constitute the very foundation of our professional standing and progress, and would it be possible to conceive of "a man with soul so dead" in our rapidly-increasing roll of membership that could not, or would not, appreciate the importance of full and free discussion upon such a topic.

Discussion! May I be pardoned for digressing just one moment, to allude to the true meaning and importance of discussion. Usage adds to our programme the discussion of papers read before our club, and by discussion, I take it, the fact is not meant that your time and mine shall be taxed to listen to deserved or undeserved eulogy, praise, and compliment. Our papers are presented to us for mutual, scientific instruction, and the discussion upon these

¹ Reported for the INTERNATIONAL DENTAL JOURNAL, by C. Stoddard Smith, D.D.S.

papers is for the purpose of giving to the club the individual ideas of its membership upon the subjects presented. Necessarily, such discussions may be critical, but I ask you to bear in mind that criticism, pure and simple, is not fault finding or blaming. It is a privilege accorded the humblest member of this club to express his views and opinions upon any paper, and should these opinions or remarks differ or agree with the statements of any essayist, the reception should be the same and the speaker accredited with at least being conscientious. Though we work, and even fight, for the promulgation of such ideas as we deem correct, let it be determined that, when the portals of our club-room close behind us, the mantle of charity shall enshrine and embrace each individual member.

Should I, therefore, see fit to exercise my prerogative of taking issue with some of the points made by the essayist, do me the justice of ascribing honesty of motive.

The essayist gives us, in brief, a history of the advancement of dental education. He takes us back to the time when all knowledge, all education in our specialty, was practical; when the embryonic state of our profession did not call for theory, and all the advantages which he has depicted as arising from a theoretical training, and leads us step by step through what might be termed the seven stages of man's development. With this idea, in the abstract, that manual, practical training is all-important and essential, I would not ask to differ. Apprenticeships I believe to be absolutely necessary, and only regret that, in addition to the preliminary examinations required by the colleges, one year's tutelage in an office is not also obligatory. It is true, as the essayist says, that if we take a greenhorn from the average walks of life and place him under the task of imbibing from didactic lectures, much time must necessarily be lost in his trying to familiarize himself with the technicalities of his selection. In this, I believe, I can speak from experience, having watched the comparative advancement of such students in the college. The essayist suggests that the object of dental education is to make dentists. With this suggestion I am in full accord, but acknowledge the fact and must claim the belief that the dental office should be the starting-point for practical training. No man can appreciate more than I do the value of office tutelage. When I entered college for the purpose of gaining the finishing touches to a professional life, had I been compelled to depend upon the practical training there received (and the advantages were as good as the best), I certainly think I should still be working for the longed-for diploma. But the question

arises, What prompted me to covet this diploma and to attend college? The fact that my profession had advanced to that state where theory and theoretical training was absolutely essential. Now, what caused this advancement? The realization by the older heads and brightest lights of dentistry that our specialty was no less than a branch of the healing art, and, being such, must need the accompaniment of a thorough education to place it alongside of other professional vocations. Does the essayist think that, had Chapin A. Harris remained in his laboratory and at his chair, carefully hiding and cherishing the light of the lamp his bushel contained, totally ignoring the instincts his nature had developed, to "go teach all nations" what he had learned, that he could have benefited the profession and the public to any extent to be compared with the fruits of his self-sacrificing, industrious, all-inspiring, ambitious life? Does he think that the time and skill of our fully-appreciated Sudduth could have borne fruit of value and importance to the standing of our profession in any way comparable with its acknowledged worth, had he confined himself to the chair and the bench? And although not all of us, indeed, extremely few, can have our names inscribed upon the professional escutcheon alongside of Miller, of Allen, and of Atkinson, will he not be sufficiently magnanimous to confess our debt is due to their theory and their research, and not to their ability to make a gold plate or contour a defective molar? Dental education, he asserts, is to make dentists, and with this I have agreed. But let us not forget the new meaning advance has placed upon that word. Mechanics, nowadays, are not dentists, and no one gift is more essential and important to the aspirant for our degree, but I am convinced that while dentists may be produced by education, mechanics are born, not made. And what must be the result of this phenomenal advance and spread? Simply that the dental profession, following in the footsteps again of its brother medicine, must divide itself into branches of special practice. Taken in its entirety to-day, one head wishing to contain, to master, and to appreciate all that is implied by doctor of dental surgery must indeed be a paragon or a prodigy. Indebted as we are to the different sciences,—anatomy, physiology, chemistry, physics, materia medica, therapeutics, biology, mycology, etc.; called upon to advise and expected to treat almost any and every pathological condition hidden behind the orbicularis oris, does it strike you as consistent to believe that a smattering of a knowledge of any of our collateral sciences, such as might be gained by listening to a few short lectures prepared, culled, and condensed

by our most eminent specialists, will fit the average candidate to occupy a foremost place before his clientele and the public? No; while dental colleges have multiplied to an undesirable extent, and while it is true that many of them are mills for grinding professional grist, simply and only as a secondary consideration, their first being financial greed and imaginary professional promotion and standing to its corps of professors, I must claim that from even this state of affairs has arisen an upward and an onward march towards our professional utopia paralleled by the strides and accomplishments of no other vocation. I am glad that the essayist has noticed and appreciated the value of this corrected system of education. I only regret the paradox of his conclusions, and fear the result upon the careless observers, and this, if any be necessary, I offer as my apology for what might at first glance appear as an attack or antagonism.

It appeared to me, while listening to the paper, that I could discern a tendency on the part of the writer to give little credit to, and place small importance upon, three important branches of the required course,—viz., *materia medica*, therapeutics, and pathology. I hope I do not do him an injustice in this conclusion, but if I am correct I also hope he will not misconstrue my motives in the great stress I wish to place upon their importance. I want to be placed upon record as avowing that to no branch of dental education are we so much indebted for our progress, and whatever standing we may have attained, as to those mentioned. What is it that enables the progressive dentist of to-day to bid defiance to that host of pathological conditions so often brought to his notice, and upon the eradication of which depends the saving of those priceless organs, in the past relegated to the forceps, but at present known to be essential to a proper performance of true physiological function? Certainly I do not believe it will be the verdict of our profession that the work so ably done in the past by Black, Gorgas, Harlan, Miller, and a host of co-workers in this field amounts to *nil*. To the results of pathology we certainly owe our present understanding of the conditions existing. To the results of therapeutics we certainly owe our ability to combat and overcome those conditions; and to the results of analytical and synthetical chemistry, as applied to the field of *materia medica*, we certainly have placed within our reach the agencies necessary for this advanced work. Then, taking the debts we owe to these branches collectively, recognizing that through their agency we hold the power I have suggested, who will doubt the importance to be placed upon these

studies to still further promote a proper recognition of our professional standing? -Truly, a *little* learning is a dangerous thing, and the idea advanced by the essayist, that a smattering of any scientific branch is all a practitioner needs to know, I feel honestly called upon to refute. It is just this slipshod method of teaching that has so often brought some institutions of learning into bad repute, no less than the consciousness on the part of the recent graduate, that his education has not been sufficient to enable him to cope with more searching and progressive *confrères*. No; I would hold and verily believe we cannot know too much. Especially is this so of any and all branches which go to make the sum total of those sciences which form the foundation of general medical practice. I do not believe the essayist will deny that even a chief in the culinary department of any hotel, an ordinary cook, whose special education in his art had been supplemented by a general knowledge of chemistry, would be in possession of secrets and powers entirely unknown to his ignorant associate. Would not the possession of this knowledge render his services more valuable to his employer? would it not have a tendency to throw a certain amount of respect around his calling and a value upon his time not to be hoped for by others? If such would be the case in so menial a position, does it not multiply many times in importance as it rises upon the scale of vocations until professional mission is reached? True education is defined as educating, leading, or drawing out the latent powers of an individual. Let us not forget, however, that while this definition is philosophic, a more specific sense would lead us to the fact that technical training is necessary to fit the scholar, or the student, for the occupation by which he desires not only to earn his daily bread, but to ornament society. This necessitates elementary schools for the multitude, secondary schools for a smaller number, and universities for the highly-favored few. We want to remember that education embraces not only the facts of instruction and good breeding, but that it comprehends the formation of mind, the regulation of the heart, and the establishment of principles. A want of education will always be to the injury, if not the ruin, of the sufferer. And a want of proper instruction will always unfit a man for the society of the cultivated.

I feel so enthused, gentlemen, upon this subject, that it seems to me this discussion might be indefinitely prolonged, and that, too, to the advantage of those who would in the slightest degree diminish or underrate the advantages of any amount of education. Jealous though I am of personal and individual reputation, not

less so am I of the repute of the calling I have selected. Frame such laws and place such restrictions at the entrance of our doors as will give us an aggregate of educated, accomplished, and competent members, and soon the dental profession will be looked to as an equal of the most learned. I trust each and every member present will contribute his quota to this discussion. I ask the indulgence of the club and the forbearance of the essayist for the time I have consumed and for some of the extreme views I may have advanced, but I am of the opinion that in this audience I can hardly stand alone in my desire to give full and adequate importance to scientific education.

Dr. E. S. Talbott.—The essayist has portrayed the longings and ambition of both rich and poor young men who study dentistry for pecuniary gain.

It is not only excusable, but even the duty of a man to think of the support that a calling will yield him and those depending on him. He should therefore consider all before he decides upon entering a vocation that requires several years of preparation and considerable expenditure of money. A mistake made early in life may prove disastrous in the end and force him to try some other mode of making a living.

The student, having decided to make dentistry his life-work, selects his college and pays his fees. Up to this point he is responsible for his own actions, but as soon as he has secured his tickets the college is responsible in a measure for his success or defeat in life.

How great this responsibility! Does he receive a preliminary examination to test his ability to understand the lectures and pursue his studies intelligently? We have known students visiting this country, attending college, and returning to their homes without understanding simple English, and yet they took a diploma with them. We know of others that graduated lately and cannot read or spell correctly.

These are the criticisms made by the public.

To my mind there is another preliminary examination far more important to the student than this. I allude to the student's capacity for acquiring mechanical and manipulative skill. Without this no student can become successful, whatever his training may be otherwise. His ability should be tested, and only when found fair should he be admitted to the college with a view to graduating. The college having selected the proper material should have a uniform standard by which to gauge each student as he progresses

from year to year. This can only be accomplished by a graded course. Uniform methods can be followed in dental colleges because dentistry is a positive art, unlike medicine and surgery, which still involve questions that are unsettled. With three courses of lectures in separate years the student should be qualified to pass a rigid examination. Mental training and manipulative skill are not enough to make an efficient dentist. The student should learn honesty in his business relations, cleanliness in his habits, and tact in handling patients, all of which are essential to success. At the age the average student enters college the mind and character are plastic, receiving impressions readily; he looks upon the lecturer as a model to copy.

Flaming advertisements in the daily papers, flattering notices of colleges and members of the faculties one or two columns in length, and notices to do dental work at cost, which students know to be untrue, all tend to demoralize him and lower his standard. Is it to be wondered at that our city is full of advertising dentists offering their services cheap to the public? Will not men following these practices injure the college from which they are graduated?

The essayist advocates that the student shall confine himself to such branches as have direct bearing on the practice of dentistry. This, though more practicable, is not conducive to the advancement of the profession. It is owing to the prevalence of this opinion that such statements as "the profession of dentistry is largely written out" are made in perfect good faith.

To this view the editor of the *Cosmos* answers by giving a long list of subjects for papers or books, all of which require preparation and study for which the student turned out in the way suggested above is unfitted. Should his ambition rise high enough to make observations and experiments, his efforts would be constantly frustrated by his ignorance of the studies that form the basis of these subjects and his lack of mental discipline.

There are two ways in which many of the existing evils can be corrected. The first is suggested by Dr. Ottolengui, of New York. He suggests the establishment of a National University. The student would attend a three years' course at the ordinary college and pass his examination. The college would give him a certificate which would entitle him to an examination at the university. The degree of Doctor of Oral Surgery is conferred upon him after having passed this examination. If he should fail he would be returned to his college for another course. This method would stimulate the colleges to do better work, for their existence

would depend upon it. All students would graduate on the same basis.

A second way is the adoption of laws similar to those of Minnesota and Massachusetts, on the part of all States giving boards power not only to establish a standard for the different practitioners but also for the colleges. The State Boards should then appoint a National Board whose duty it shall be to examine into the workings of the colleges. This would force them to do better work when below the standard, for if they should fail to do this they would be ruled out. The National Board, not being a legalized body, could only act as an agent for the State Boards.

The State Boards, being legalized, could rule out such colleges as are not up to the standard. This is a mere suggestion of plans that might be pursued.

Dr. W. W. Allport.—There are many things in Dr. Smith's paper to commend, and with which I agree, but there are some ideas in it with which I cannot agree, and think it will do harm to let the paper be published and go forth in its entirety with the apparent sanction of all the members of the club. In addition to the criticisms that have already been made, I wish particularly to express myself as being opposed to the idea that we should have more of the practical, at the expense of the scientific, taught in our dental colleges, or that there should be relatively more of the practical than of the science of dentistry taught than we now have, for it is only upon the science that an intelligent practice of dental surgery can be pursued.

When I commenced the study of dentistry, with a few exceptions, the teaching was almost wholly practical. Dentists were not expected to understand anything except the manipulation necessary to clean, fill, and extract teeth, and put in sets of artificial teeth, and this was usually taught in private offices in about six months, there being but one dental college then in existence. Since then great improvements have been made in the instruments and materials used, as well as in manipulation, but it is the development of the science of our calling that marks the great difference between dentists of forty-five and fifty years ago and those who are now educated in accordance with the highest grade of modern teaching. Then the highest skill of the dentist was reckoned to be in the handicraft of the artisan; to-day his greatest skill has its foundation in his knowledge of the nature and scientific-medical treatment of dental diseases. Say what you will, the main object in learning any business is to make money at it,

and, in most cases, when a young man enters upon business on his own account, his first and leading object is to this end. If a dentist has not acquired the habit of study, and become versed in the science of his calling while a student, the chances are that, when he enters practice, his thoughts and energies will be mainly directed to that which most readily brings money,—the “practical,” the manipulative part, at the expense of the scientific, upon which only an intelligent practice can be based. But let a young man go forth fully equipped in the science, and with but a moderate amount of technical teaching or acquirements, the incentive of money-making will readily prompt him to make up the technique that he may have failed to learn while in college. By this let it not be understood that I would have the student learn less of the technique than is now being taught in our dental colleges, but rather that I would have more science, more of what might be called medicine, taught to dental students than most of them now get. If either is abridged, let it be the practical, for that, as I have before said, would be more apt to be made up in after life.

For the proper scientific teaching of dental students, I regard the joint teaching in medical colleges and dental schools far preferable to the teaching in what is known as independent dental colleges,—better calculated to make intelligent and broad-minded practitioners. It is a common remark among dentists that medical men know nothing, or are exceedingly ignorant of the diseases of the teeth, and that therefore it is a waste of much valuable time to attend medical lectures in a medical college; and it is a common remark for medical men to say that dentists know but very little of what medical men know; that dentistry is almost entirely mechanical, or manipulative. The unfortunate thing about these two statements is, they are both too true. The ordinary medical man knows but very little of the special pathology that should be possessed by every practitioner of dentistry, and yet he possesses that broad scientific, medical knowledge upon which all special pathology must be based, without which foundation no man can become even an intelligent *student* of a specialty, to say nothing of an intelligent practitioner of it. But let anything be said to an independent dental college-man about this broad medical teaching for a dental student, and his reply will be, There is no need for it, and besides that, we have medical men in our faculty to teach dental students all they need to know of the science of medicine; and they will make this statement in the face of the fact that they say physicians know very little about the diseases of the teeth, or

what dentists should know, as well as that the physicians feel that dentists need but very little medical knowledge.

Between the fact that medical men possess but little of the special knowledge that dentists should understand and the fact that medical men think that dentists need but little medical knowledge, it is evident that the dental student gets but a very limited amount of the latter by the teaching of medical men in these independent dental colleges, for they certainly would not teach them more than they feel or think they need.

To illustrate what is meant: Within the last three years, I happened to be present at a lecture upon the physiology of digestion and assimilation, by a medical man in one of these colleges. After it was over, occasion was taken to compliment him on his lecture, to which he replied, "It was not very full, or in detail what I would have given to a medical class." "Why," said I, "should not a dentist have just as perfect a knowledge of the physiology of digestion as a regular physician?" "Oh," said he, "it would do no harm, but it is not usually supposed to be necessary." At a later time I was in another dental college when a physician was giving a lecture on sarcomatous growths. In talking to him after the lecture was over, he said, "I hope you were interested in my lecture, but," said he, "it would have been very different had I been delivering it to a class of medical students." "Why so?" said I; "such growths are not infrequent in the mouth, and dentists should certainly be able to diagnosticate them when they see them, if not to operate upon them, when operations are indicated." "Oh," said he, "we have surgeons for that purpose, and it is not necessary for dentists to know much about such matters." And this is about the extent of medical teaching that dentists usually get in this class of colleges from medical men.

It is just as important that the dentist be well grounded in the fundamental sciences that go to make up a medical education as it is that the oculists or the gynecologists should be, and in no place are these as well taught as in medical colleges, except in the university system of teaching; but a dental department in a university, where its teaching is all independent of the scientific departments of those universities, is in no way any better than the ordinary independent dental college, for they derive no benefit from the well-known State university system of teaching. If I could have my way, no student should be graduated in dentistry until after he had received a general medical education; but next to this he should receive jointly with medical students all that goes to make up the

fundamentals of a medical education. He should recite from the same books, attend the same lectures, and submit to the same examinations in anatomy, physiology, chemistry, materia medica, and therapeutics, as well as in the general principles of pathology and surgery, as do those who expect to graduate in medicine, and then take up the practice of any of its specialties, pursuing his special studies in dentistry in a department devoted to that purpose, and nothing less than this will ever make the dental practitioner as intelligent in the treatment of the diseases that come within the scope of his practice as are those who are specialists in the treatment of other diseases.

But, say those who are opposed to this thorough teaching, why is it necessary for a dentist to understand the size of the pelvis, or of the surgery of parts remote from the mouth? As well might it be asked, Why should the oculist understand the size of the pelvis, or the bones of the leg and feet? and yet, who would want to employ an oculist who had not this general medical intelligence? And there is not a principle in surgical pathology or therapeutics but what is applicable in the treatment of the diseases that come within the scope of the practice of the true dental and oral surgeon. And without a knowledge of these principles, supplemented by necessary special knowledge, he cannot meet the highest requirements of his calling. Instead of the scientific or medical portion of a dental student's education being doled out to him in such stinted portions as medical teachers in dental colleges think he needs, it would be far better for him to occupy his time in the study, and enjoy the broader teaching in his medical studies that is laid down and exacted in our best medical colleges, that he may pass without favor the same examinations by the chairs that is required of those who expect to take the medical degree, as is now required by some, at least, of these joint schools,—the dental students scorning to ask or receive any favors in their medical examinations. A dentist thus grounded in his knowledge of the principles of general medicine would himself be able to prescribe such remedies in the treatment of diseases, and make use of such means as his judgment might suggest to him, as being best adapted to the case in hand, as other specialists do, rather than to shape his treatment in accordance with the very limited medical teaching of men who have but a faint conception of the requirements essential to the proper treatment of dental diseases.

Dr. C. F. Hartt.—A middle course is generally the safest. A well-rounded dentist is a safe man, and should be reasonably well

educated. As much depends on the student as on the college. If there is a hungering and thirsting for knowledge, colleges will afford the means of supplying the want.

Dr. C. N. Johnson.—I am heartily in accord with the spirit of the paper, and also agree with much that has been said in apparent criticism of it. In fact, I think the two sides are not so far apart in belief as would appear, and that some things said in the discussion are due to a misconception of the paper. I do not believe that the essayist meant to maintain that nothing but practical branches shall be taught. The argument of the paper, as I understand it, was that in the time given for studentship it was not possible for the average student to gain a thorough scientific knowledge and also a perfect practical training, and that where it was obviously necessary to slight something, it was better to lessen the theory and devote more time to practice. This I consider was a good argument. A student armed only with scientific knowledge is not a proper person to send out to practise dentistry. The principal fault with dental education to-day is that we do not get the right kind of students into the colleges to begin with. It is impossible to pour a quart of material into a pint measure and make it stay there. Our methods of matriculation are too lax. If we, as a profession, are to make an impression on the world, we must be intellectual men, and we cannot, in a short course in the dental college, gain sufficient knowledge to entitle us to that distinction. A man should be educated before he enters a college,—he should know *how* to study. A young man just from the plough with mind untrained loses half his first term before he can begin to learn anything. A uniform standard of requirements for matriculation should be adopted and adhered to by all colleges. It is too manifest that students without an education are often allowed to matriculate on the theory that if one college does not admit them another will.

In Canada the law governing applicants is far in advance of present methods here. The college holds no matriculation examination whatever, but requires the applicant to show at least a provincial third-class teacher's certificate, including a knowledge of Latin, and in Canada this means something. Examinations are held with great strictness, and the applicant who presents such a certificate has at least the foundation for a good education. This question of matriculation should be carefully considered, and concerted action taken on it by all our colleges.

Dr. E. M. S. Fernandez.—One thing that would be a great im-

provement in dental teaching is that the student should know something about drawing. Drawing should be used in every effort to teach. He would require lineal and mechanical drawing to be included in a preliminary examination. Another improvement needed is that the professors should be made such by some authority. Professors are now self-styled as such. We need a place to teach men how to teach.

Dr. E. J. Perry.—With some noble exceptions, colleges have degenerated into a *business*; the commercial idea has crowded out the idea of teaching. Colleges profess to teach ethics, and in the infirmary they teach the most improved methods of quackery. Professorships have grown cheap. The commercial idea in colleges prevents the proper teaching as to the construction of metal plates. This idea is ruining the colleges. Colleges graduate men and send them out to compete with the infirmaries of the same institution. Think of a theological seminary organized for profit, or of any educational institution run for money!

Dr. C. R. Baker.—The idea of profit was not first established or practised in colleges. Students were taken into private offices for profit, and the mistake was in asking them two hundred or three hundred dollars for what they would get there, which would not be one-tenth of what he would give. Students were taken in for a profit, and how much were they taught? It is a mistake to advise students to go first to a dental college. They should first go into a private office. The first thing they should see is the refinement of a private office; in a college only slipshod methods obtain, and the object is to get in as many fillings as possible. If they first go to a college, they know nothing of the terms used. They may go to a university with students who have studied for some months, yet they are expected to know as much as they do. They take lectures the same as the medical student, but they are cut off from laboratory or hospital practice. He regrets every day that he knows so little about drugs and therapeutics. It is impossible to know too much of science, yet we want all the practical knowledge we can get. We want to get at principles, yet we cannot go all through the *materia medica*. To lay a foundation is all we can do; but what we do take up should be thoroughly mastered; go to the bottom.

Dr. J. H. Woolley.—The ethical side of dental education will have its influence in the profession at large. When the discussions on these subjects are read, more thought on them will be aroused.

Dr. A. E. Baldwin.—It is probable that the two sides of this discussion are not so far apart as they appear. A profession is adopted from self-love and self-interest: therefore, when beginning it, the person should be competent, and not learn it afterwards. First, the dental student should be capable of understanding the principles brought before him. Honesty should be taught him. He is now taught lies from the day he enters a college, not *as* lies, but *as* profits. Dental work is advertised to be done "at cost." A student asked the cost of an oxyphosphate filling, which was about one cent, but when put in by a professor "at cost," the amount was three dollars and seventy-five cents. Professional life is begun in iniquity. Can a student put confidence in such professors? On the contrary, he looks with suspicion on the man who deceives him. The students do as do the professors. The preliminary examination should be thorough and should be insisted on. If a dental college is properly arranged and officered by those who have ostracized profit, there is no place where a student may so well begin. The first impressions are lasting ones; it is easier to learn right than to unlearn. It is impossible to teach all subjects thoroughly; the elements should be fully taught, and the rest may be elaborated afterwards. Half the task is accomplished when the student has learned how to study. When I first entered a dental college they had no demonstrator at all. There are not demonstrators enough in the colleges. Some students require a demonstrator all to themselves. The medical profession is spoken of in raillery by dentists, but it is never the case that medical men speak so about dentists. Medical men are lamentably ignorant of "gum-biles," but they are glad to have their attention called to anything that helps them. We are apt to glorify ourselves too much. If we realized how little we know, we would study more.

Dr. A. J. Nichols.—If we are members of a profession, why should we not qualify as general practitioners? We treat too much locally; we do not look beyond a filling. What per cent. of the dental profession is capable of prescribing for a patient. A thorough medical course should be required in a dental college. A student should go to a private office first.

Dr. C. S. Smith, in closing the discussion, said: It is plain that the real purport of the paper has been misapprehended, as was perhaps to have been expected. It was not the intention to belittle education; but quite the contrary. What is contended for is that if the amount must be limited, what is obtained should be of the

right kind. In all the talk about the necessity of a complete medical education for dentists, the fact is lost sight of that the object of dentistry is to save teeth,—and from what? From dental caries, which it is not at all certain is a *disease*; the treatment of it, when simple, is, aside from sensitive dentine, purely mechanical. We talk of educating the people up to an appreciation of their teeth, and taking proper care of them; if the day ever comes when this is done, there will be no need for any medical knowledge whatever, aside from oral surgery and the treatment of irregularities, for dexterous manipulation will then be about the only thing required for success.

Monday, April 23, 1890.—Evening Session.

The Chicago Dental Club met as usual, and the evening, aside from routine business, was mainly consumed in hearing from Dr. J. N. Crouse, who had been given the floor to explain the objects of the Dental Protective Union, and in remarks by members on this subject.

At the close of the discussion the following resolution was unanimously carried:

"Resolved, That the Chicago Dental Club endorse the Dental Protective Association as being worthy of the confidence and support of the profession."

Adjourned.

C. STODDARD SMITH, *Secretary.*

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting, Tuesday evening, February 18, 1890, in the New York Academy of Medicine, No. 12 West Thirty-first Street.

The president, Dr. J. Morgan Howe, in the chair.

Dr. Benjamin Lord.—We were all so interested in the discussion of the paper at the last meeting that we entirely forgot to express our thanks to the essayist for his kindness; and I move you, sir, that a vote of thanks be tendered to Dr. McCausey, of Janesville, Wis., for his very interesting and able paper.

Dr. Lord's motion was carried, and the secretary was instructed to communicate the same to Dr. McCausey.

Dr. Lord.—It will be remembered also that Dr. H. C. Meriam sent here quite a number of files, of a new and improved pattern, for finishing fillings, and there was no mention made of his kindness; I move you that a vote of thanks be given to Dr. Meriam for the presentation of the files at the last meeting, and that the secretary be directed to report the same to Dr. Meriam.

Dr. Lord's motion prevailed.

INCIDENTS OF OFFICE PRACTICE.

Dr. William Jarvie.—Mr. President, I met with a case the other day that was so peculiar to me that I thought I would take a model of the teeth and present it to the society. The patient is a lady from fifty to fifty-five years of age, with all the upper teeth in good condition, and of hard, dense structure. The left central, for several years, has been gradually receding; not by erosion or attrition, but simply settling into the jaw. Some five years ago, it being then somewhat shorter than its fellow, the longer tooth was ground away and they were made both of the same length. Since that time there has been a very marked recession or shortening of the left central. It is the first case of the kind that has ever come under my notice, and I do not think it is a common occurrence. It is not caused by the occlusion of the lower teeth, as the lower centrals do not touch the upper centrals.

Dr. N. W. Kingsley.—How does Dr. Jarvie know that the other teeth have not elongated?

Dr. Jarvie.—That is a very pertinent question. I had never seen the lady until within the last month or so. If it is an elongation of the other teeth it is an elongation of the whole upper denture. It may be that the other teeth have elongated and this tooth alone remained in place. The other teeth are all firm.

Dr. C. E. Francis.—It would seem to be an elongation of the other teeth.

Dr. C. F. W. Bodecker.—Mr. President, among several cases of antrum disease that I have had lately there is one exceptional case which I would like to report. The patient is a lady between twenty-five and thirty years of age. She tells me that about six or eight years ago she had the left upper lateral incisor filled with gold, and that some weeks after the tooth began to ache. She went back to her dentist, then in the country, who advised her not to do anything with it. About two years ago there was a swelling about that tooth, which swelling extended back almost to her ear and up under the eye. She again applied to her dentist, who told

her that he could not find anything the matter with her teeth; that they were sound and in good condition. Last May she was sent to me. I found none of the teeth decayed, but upon examining the parts above the first and second left upper bicuspid and the first molar, I found that the external plate of the antrum had been entirely dissolved. I made an incision a little above the first bicuspid root, into which I inserted a drainage-tube. One peculiarity was that I could not find any opening between the antrum and the nose, and on further examination I found that the antrum was a very abnormal one. Measuring from the front backward it was only about three-quarters of an inch long. It begins between the roots of the first bicuspid and the eye-tooth and goes back about as far as the root of the first molar; no farther. I sent the patient back to the gentleman who sent her to me, a physician of Hoboken, to see what he could do with the case. He sent her to Dr. Lange, the well-known surgeon, who examined the case, and was at first under the impression that the trouble was not in the antrum at all, but that it was some cyst which had developed between the two plates of bone, and that one of the plates had projected itself into the antrum. There are such cases on record. But against this theory there was the fact that the cavity was lined by a mucous membrane, which, with a cyst in such a position, is hardly probable. The patient was then sent to Dr. Delevan, an eminent specialist of diseases of the nose and throat, who tried to re-establish the osteum maxilla (opening between the antrum and the nose) by forcing a galvanic cautery needle through. You will remember that in the normal condition this wall is exceedingly thin, and can very easily be perforated by the galvanic cautery; but in this case Dr. Delevan could not get through. If there had been a cyst lying just within the antrum, this wall would not have been any thicker than usual, I should suppose. We do not know what to do with it; whether to take out the drainage-tube on the buccal surface, and leave it to nature to heal, or whether to go through in spite of the thickness of the wall of the antrum. I would like to have Dr. Atkinson, or any one, give me some advice. The antrum is now in an absolutely healthy condition, except that the osteum maxilla is closed.

Dr. Jarvie.—Why don't you let it alone?

Dr. Bodecker.—It is necessary to have an air-passage through the nasal cavities. I have a case similar to that, which has been in that condition for about nine years, which was also examined by Dr. Abbott. I proposed an operation, but the patient's family physician objected to it, and the case remains as it was.

Dr. George S. Allan.—Mr. President, if there is nothing else to be presented, I would like to read a short preamble and resolution, after which, I will, in a few words, give my reasons for offering them to the society.

WHEREAS, Drs. Heitzmann, Abbott, and Bodecker have promulgated certain theories as to the histological characteristics of the teeth, claiming the demonstration of the presence of a protoplasmic reticulum in both enamel and dentine, and as said theories are not generally accepted, and the demonstrations are questioned or doubted by other gentlemen of our profession who have devoted much time to histological investigation; therefore, be it

Resolved, That Drs. Heitzmann, Abbott, and Bodecker be inquired of, by the secretary of this society, whether they will co-operate with this society in an effort to have the truth known in regard to these disputed points, by obtaining the consent of three experts, to be chosen in a manner satisfactory to themselves and to the officers of this society, which committee shall have the right to examine specimens (slides) submitted, and be requested to report to the society at as early a day as practicable.

You all know how much interested I have been in this subject, and also how much interested the three gentlemen named have been, and how they have repeatedly stated their views and asserted them as proven beyond question, and in a manner that would almost throw doubt on the common sense or good judgment of any one not accepting them. Now, these views, if I understand them, fundamentally alter all our accepted ideas as to tooth-structure; and if they are accepted, we, as a consequence, must accept certain other theories as to the pathological conditions of the teeth. The one depends upon the other, and if one falls to the ground the other falls with it. Furthermore, if these views are accepted, they greatly militate against the acceptance of the theories that were lately so ably brought before the dental world by Dr. Miller, of Berlin. As you all know, the New York dentists are held responsible by the profession at large for their correctness. In other words, outside of New York City but little has been said about the theories referred to, and but little credence has been given to them, as I understand it. Travel where one will, it will be found that the New York dentists are held responsible for these theories. This being the case, if we are acting in a measure as godfather to these views, I think it is right, just, and proper that we should be able to go before the dental world with our reasons for accepting them, and our proofs of their reliability and worth ready at hand. Such an

endorsement we can give only after receiving a favorable report from a committee such as this preamble and resolution call for. But if the committee reports unfavorably, then the gentlemen must seek elsewhere for support. I have doubted them from the beginning, but if it is necessary for me in the end to recant, and eat humble pie, no one will do it with a better grace than I will. But I must be satisfied that I am wrong first. It would be very easy to offer a resolution here calling for a committee of three or more experts to call upon Drs. Heitzmann, Abbott, and Bodecker, and ask them to show the slides; but such an examination would be simply worthless. An expert in the use of the microscope is only made by long and careful study; it is not a subject which could be committed to any one who has not made it a study and given it both thought and attention; therefore it seems to me wise and proper that this society, under the conditions, should take this step, both for the sake of the gentlemen who have so boldly thrust these views before us and for the sake of those who have taken the liberty to doubt them. I submit this preamble and resolution for the consideration of this society, hoping that such a committee will be appointed.

Dr. Jarvie.—Mr. President, this is a very delicate affair, and we want to give it due consideration. There is one thought that comes into my mind regarding the acceptance of the resolution; that is, the propriety of the words "we want the truth known." We do not want to hurt the feelings of anybody. It raises the question whether the gentlemen have told the truth. That is the only thing I would take exceptions to,—the wording of that line. I know Dr. Allan does not mean anything of that kind, but it struck me that possibly it might be given that interpretation. I think that otherwise it is a very proper thing.

Dr. Allan.—I simply want to know the facts of the case, or rather, I want the society and the profession to know what the truth is: whether a reticulum exists or not. It is not a question of the integrity or honesty of the gentlemen in the remotest degree. It is only a question of whether their slides show a reticulum. It is a mere matter of demonstration; and the question can only be decided by submitting the slides to gentlemen whose ability to decide such a question is beyond dispute.

Dr. S. G. Perry.—Mr. President, it seems to me that this is a very fair proposition. I read that resolution before it was presented here. It seems to be drawn in a good spirit, and I hope it will pass. I for one would like to have this question settled. It is

a question of the minute structure of the teeth, and I do not know how it can be settled unless it is done by those who are truly experts in the matter.

Dr. Allan's preamble and resolution were adopted.

The President.—Gentlemen, I now have the pleasure of introducing to you Dr. Edward S. Peck, of this city, whose name, no doubt, you are familiar with. Dr. Peck will read a paper entitled "Reflex Ocular and Facial Symptoms of Nasal Disease." (For paper, see page 321.)

The President.—The subject of Dr. Peck's very interesting and able paper is before you, gentlemen, for

DISCUSSION.

Dr. C. E. H. Phillips.—Mr. President and gentlemen, I am sure every one must feel, as I do, very grateful to Dr. Peck for the care and time he has given to the preparation of this paper, and I think it will call the further attention of gentlemen in his specialty, as well as that of the dental surgeon, to this important subject of reflex irritation. In the transactions of the Odontological Society of Great Britain for November, 1883, there is a rather lengthy paper which bears strongly upon this subject, and which must be of great interest to any one who has not already seen it. It is by Henry Power, of London, who is ophthalmic surgeon in St. Bartholomew's and Westminster Hospitals. His paper is on the relation of dental lesions to diseases of the eye. He has consulted authorities for some fifty or one hundred years back, and cites a number of cases of his own and other authorities, mentioning cases where the eye was affected by disease of the antrum and by difficult dentition. He regards the subject of reflex irritation as of great importance. His paper is in three sections,—reflex irritation affecting the striated and unstriated muscles, reflex irritation affecting the cornea, and reflex irritation affecting the optic nerve and the retina,—all of which have some very fine points. He states that one of the commonest forms of facial disturbance induced by these diseases is the failure or loss of power of accommodation. In many cases of ocular disease depending upon dental lesions great improvement was found after the extraction of the diseased teeth, and in many cases a cure resulted from this treatment. Both his own cases and those of other authorities are mentioned. There are two which seem to be rather important. One is a case where loss of sight occurred for thirteen months and was restored by the extraction of a tooth the roots of which penetrated the antrum.

Another rather curious case of intermittent blindness, it might be called, was due to a carious molar tooth into which food was crowded. When the food became impacted in this tooth, loss of sight was the result, and when the tooth was opened, sight was restored, and was permanently restored by the extraction of the tooth.

The *Medical Record*, of September, 1888, mentions a case of amaurosis arising from a carious tooth. It is a case of Dr. Rivas, quoted from a French journal, the case of a woman thirty years of age who was wholly blind in one eye. She suffered from a carious tooth on the same side; the extraction of the tooth restored her sight, and she had no more trouble in that way.

I would like to state a case in my own practice,—a lady who had been treated nearly a year for ear trouble and slight facial neuralgia. She resided in New Jersey, and had been treated by her local physician without beneficial results. She consulted, in Jersey City, a friend of mine who is a specialist for the eye and ear, and he made a careful examination without being able to find the cause of trouble. When she came to me, I made a thorough examination of the mouth. She had a number of teeth filled, but the work seemed to have been well done, and she complained of no trouble at all in the mouth; no pain about the teeth. I was about to return her to the physician with the statement that her mouth and teeth were in good condition, when, to be more thorough, I took a little wedge of pine wood and placed it between the teeth, requesting her to bite on it as it was passed around from one side of the mouth to the other. When biting on the wedge placed over the inferior twelfth-year molar on the right side, she spoke of "a little different feeling" in that part of the mouth from what she noticed elsewhere. It was not pain, but a different feeling. On taking the handle of a mouth mirror and tapping on the teeth, the moment I touched that tooth she repeated that it felt different from the other teeth. I found quite a large and nicely-appearing gold filling in this tooth, which I told her I would like to remove. I removed the filling, and as I took the last piece of gold out there was an odor of decomposition, and on cutting into the tooth a little farther I discovered it to be dead. In one of the root-canals there was a small quantity of pus. I told the lady I believed this tooth was the cause of the ear trouble, and I requested her to have it treated, which she very willingly did. I treated it a number of times, removed all the decomposed pulp, and afterwards filled the tooth. The neuralgic trouble diminished immediately on opening the tooth, and there has been no recurrence of it since the tooth

was filled. There was no facial neuralgia or trouble in the ear while the tooth was under treatment, nor since.

Dr. A. B. Norton.—Mr. President, the preceding speaker has alluded to cases of blindness having been cured by extraction of the teeth. I would like to say that not only are there cases on record of vision having been restored by the extraction of teeth, but cases also have been reported of vision having been *lost* after the extraction of teeth. In another disease, which I do not think Dr. Peck mentioned in his paper, there is a case reported by Galezowski, a case of exophthalmia of one eye, with optic neuritis and complete blindness, in which the patient suffered a great deal of pain, which, with the exophthalmia, was relieved entirely by the extraction of a carious molar. Vision was, of course, destroyed from atrophy of the optic nerve, and was not restored.

A year or two ago I had a rather peculiar case of exophthalmia of one eye only; and, not being satisfied in regard to the condition of the teeth, I referred the patient to Dr. Howe, who reported the teeth as being in good condition and not the cause of the eye trouble. The patient was then referred to a neurologist, who found that the exophthalmia was due to some cerebral trouble.

I have recently seen a report of one or two cases of headache in which an oculist had treated the eye with correcting lenses without giving relief. Attention was then directed to the teeth, and some gold and amalgam fillings were found, and the headaches were entirely cured by taking out the amalgam fillings. The oculist, in reporting the cases, only made the assumption that *possibly* the headaches were due to the fact that, from mental or physical over-exertion, the saliva had become acid, and the acid saliva had served to set up an electrical action between the gold and amalgam fillings in the teeth.

I would like the opinion of some of the gentlemen present as to the theory suggested by the physician reporting these cases.

Dr. Charles D. Cook.—I would like to ask whether the pulps were dead in the teeth in which the amalgam fillings were, or whether the teeth were sound and healthy.

Dr. Norton.—The cases as reported stated that there was ulceration at the root of the amalgam-filled tooth.

Dr. Cook.—I should doubt the assumption, then, of sufficient electrical action being set up to cause headache or any other pain. The fact that the tooth was ulcerated was sufficient, without any other consideration, to account for the disturbance. I think dentists generally will bear me out in that conclusion.

Dr. Bodecker.—I am much pleased with this very interesting paper, and will mention a few cases of reflex action, although they do not directly apply to the subject. The first is one of a lady who some years ago came to me suffering with pulpitis of the left upper lateral incisor. As soon as I opened into the pulp-chamber from the lingual surface she complained of a terrible pain in her fingers. I was told that she had been to Wiesbaden two years in succession for relief from rheumatism in the corresponding arm and shoulder. I destroyed the pulp. Two days after that I saw the lady again, and she told me that the queer sensation which she had had in that arm was gone. I have seen the patient since, but the pain in her extremity never returned. After the pulp had been removed from the tooth it was immediately placed in a very weak solution of chromic acid, and afterwards embedded, cut, and prepared for microscopic examination, revealing numerous pointed speculæ of bone, which had developed in the pulp tissue, and a few of them between the bundles of medullated nerve-fibres.

Another case of a very peculiar character, which I have shown several times at clinics, was that of a lady of about twenty-five or twenty-eight years of age, who had a swelling of the left side of the lower jaw, which always came during the menstrual period, and remained there without any accompanying pain whatsoever. She had been to two other dentists, and they each took out one of the molars. First the wisdom tooth was removed, then the first molar. When I saw the lady I thought probably it was an abscess of the second molar, which was perfectly sound and healthy. I attempted to drill into it and found it to be alive. I immediately stopped the drill-hole with gutta-percha. I treated it without any success whatsoever. Dr. Atkinson saw the case at one of the clinics, but did not know what to make of it. At that time Dr. Louis Waldstein lived in my house, and he examined the case and inquired into it very minutely. I saw him last year, when he told me he had solved that mystery. He found that the swelling originated from some uterine trouble, which has since been cured, and the swelling has never returned.

Dr. Littig.—As the case that Dr. Peck last reported was seen by a number of the gentlemen here, and there was considerable consultation over it, I would like to state that my impression is that instead of the lateral tooth being broken off it was both the centrals. Of those gentlemen who examined the case some were of the opinion that the cause of the neuralgia was remote from the teeth, and others seemed to think it was due to one of the pulps

of the broken teeth. Treatment was undertaken; I drilled into the tooth a certain distance and treated it, and that seemed to give temporary relief. The patient was very anxious that I should destroy the pulp of the tooth, which was done. I took out the pulp, and for a few weeks he said he thought he was better; but soon the pain returned with renewed vigor. The disturbance was more general, and the gentleman was very ill, for several weeks in his bed. The neuralgic pain continued until the operation was made that Dr. Peck has spoken of. Since that time there has been no trouble whatever. I only state the facts of the case here so that those who saw it may know the result of the case which they had under consultation.

Dr. George Howe Winkler.—Mr. President, I think that neuralgia of the face and head are caused by dental lesions about nine times out of ten; and the exhibitions are so varied that we are oftentimes unable to discover the true cause. A friend of mine consulted me once in regard to one of his patients who had suffered for two or three years with attacks of neuralgia of the eyes, so violent as to protrude the eyeballs from the sockets. She was scarcely free from neuralgic pains about the eyes for forty-eight hours at a time. I examined the case, and found two incisors with devitalized pulps, the other incisors having been lost. The cuspids were almost entirely denuded of their enamel, and at the margin of the gum all around they were exquisitely sensitive to the touch of an instrument or tooth-brush. I advised the immediate extraction of the two dead teeth, which were somewhat loose, and that the cuspids be retained. The other teeth had been lost, and she had only these four teeth. In order to relieve the exquisite sensitiveness of these teeth, I advised the making of a delicate platinum band to cover each denuded surface. My friend extracted the two dead teeth and let the patient rest a few days. She was relieved for three or four days; then the neuralgia returned with its usual intensity. He carefully adjusted these platinum bands around the teeth, and for three weeks she did not have a single twinge of neuralgia. I lost sight of the patient, but for the three weeks that she was under my observation these sensitive surfaces were comfortable, and she was entirely relieved from neuralgic pain after having suffered almost two years.

Dr. C. A. Woodward.—Mr. President, I have a case which is somewhat in the line of the subject to-night. Some four months ago a lady, thirty-nine years of age, came to me suffering with a discharge of pus from around the back part of the last tooth in the

lower jaw. I examined her mouth and noticed the absence of the wisdom tooth. As she was quite sure it had never been extracted, I concluded that a retarded wisdom tooth was causing the discharge of pus. I burned away the gum quite freely, then burred away the alveolar process from around the wisdom tooth, when I found the tip pointing through the process. From the time I burred away the bone freely from around the tooth the pus stopped discharging. I dismissed the patient, thinking she would have no further trouble. She returned three weeks ago with a similar condition on the other side of the jaw. I came to the conclusion that it was caused by the other wisdom tooth, and I began to treat it in the same way. This was about two weeks ago. I saw the lady but twice, when she stopped coming; but to-day she came in and said I had spoken to her about retarded wisdom teeth sometimes causing a great deal of trouble, and she then told me that she had a large swelling on both sides of the lower part of the neck just over the thyroid gland. She informed me that she was under treatment for that swelling by one of the most renowned surgeons of New York without obtaining any relief; and she had noticed that when the teeth were troubling her most the swelling of the gland would be increased. I have but very little doubt that those retarded wisdom teeth are the cause of the swelling of the glands, which she considers very serious, having been told it might produce death if it went on, or at any rate that the gland must be removed.

The President.—I hope Dr. Woodward will report on that case at a future time.

Dr. Woodward.—I shall be glad to do so.

Dr. George S. Norton.—Mr. President, it seems to me that the subject of nasal reflex action is a little too high for the dentist and a little too low for the oculist. The discussion seems to have wandered from the subject of the paper. I have very little to do with the throat and nose, devoting my time to the eye exclusively. In my experience of twenty years I have not found that disease of the nose very frequently produced ocular disturbance from reflex irritation, though it does occasionally. I do sometimes find, however, that the eye is affected from the disease extending to the lachrymal ducts, causing partial closure of the lachrymal ducts and in that way affecting the eye. This subject has been elaborated somewhat extensively within the past two or three years, and within the last two months an article has been published at Paris, France, by Professor Galezowski, in which three or four cases are

described in which symptoms simulating glaucoma were produced by obstruction of the lachrymal ducts, and which were relieved by probing of the ducts.

I have also occasionally found inflammation of the conjunctiva dependent upon reflex irritation from the nose and from catarrh involving the lachrymal apparatus.

The discussion has reference especially to the teeth, and that is a subject, I suppose, of prime importance to those present. In the first place I would say that I believe nasal disease more often causes trouble in the ear than it does in the eye. We also quite frequently find cases in which dental lesions cause inflammation of the ear, but not so frequently disturbance of the eye.

Turning to the teeth, there was one case that appeared in my practice four or five years ago which taught me that disease of the teeth may produce very severe trouble with the eye. It was a case in which I had operated for cataract. It was a perfectly smooth operation; nothing about it which should have caused any subsequent trouble. The next day I found that the man had suffered intense pain in an upper molar tooth on that side, and I then found for the first time that he had a decayed tooth. He had suffered all night from the pain, and it produced a most severe inflammation of the eye, and the eye was lost. That has made me very careful to question the patient before operating to ascertain if there are any decayed teeth that may cause trouble.

Dr. E. A. Bogue.—I would like to take the position of a questioner. The gentleman just behind me made reference to nasal reflex being too high for the dentist and too low for the oculist; and yet Dr. Sexton, whom I have not the honor of knowing, published an article, or two or three, on the subject of dead teeth in the mouth. That subject was brought to my mind by a remark of our friend who has just seated himself,—“disease of the teeth.” I should very much like to know what he means by disease of the teeth. I have been trying for four or five years to find out what Dr. Sexton meant by dead teeth in the mouth. Indeed, from the depths of my ignorance, I believe that if there were any dead teeth in the mouth they would be expelled. I had supposed the symptoms of glaucoma might be produced by irritation almost anywhere along the track of the fifth pair of nerves. That those symptoms may disappear as readily as they arise, and that they may be caused by either one of three definite conditions which we as dentists are called upon to treat, may be readily believed. Those three diseases, or three manifestations of the same disease, perhaps,

are as follows: First, if the limy matter which is deposited around the necks, and oftentimes around the roots, of teeth, is allowed to accumulate, it may produce a small abscess which, for the time being, sometimes a day, sometimes two days, will produce considerable pain. I know, for I have tried it. Secondly, exposure of a dental nerve or pulp. A good big molar tooth has something like two hundred thousand nerves in it, as nearly as we can find out, but it has only one pulp. If those nerves, or the peripheral extremities of the dental nerves, are exposed, they give pain, just as exposed nerves do elsewhere in the body. That pain, however, I believe, is not shown in reflected symptoms that would be taken cognizance of by gentlemen practising other branches. The third cause of pain from the teeth is pericementitis, and that very rarely takes place except as a complication with some of the causes of an abscess. That is a condition, as I understand it, which has called forth Dr. Sexton's paper, and which has called forth a good deal of interest, and possibly expression, of practitioners in other branches in regard to reflex action. This condition of abscess after the pulp of a tooth has died is a condition which almost always involves pressure. It always involves pus formation, and that formation of pus, existing rather deeply seated within bones which may or may not be spongy ones, causes pressure upon the dental nerve, and thus a reflection appears there or elsewhere. Necrosis I do not want to go into now. If it be true that exposure of the pulp of a tooth occasionally causes pain, which might give reflex action and confound us when we are making a diagnosis, and if it be true that abscesses arise from the decomposition of a pulp from which life has departed, it is time that we all look carefully into it. A dentist once consulted me as to what should be done with an abscessed tooth, and in that individual case I told him to drill in its full length and let out the pus. The next I heard of him he was drilling into teeth right and left. He was utterly unable to discriminate between teeth with living pulps and teeth with dead pulps. I have within a year seen a patient whose living pulp he had drilled into for the purpose of relieving pain.

The President.—Did Dr. Bogue say he was a dentist?

Dr. Bogue.—I beg your pardon, but I have again to expose my ignorance. He said he was. He has a sign out.

This desultory sort of talk, in which we wander a little from the subject, will probably allow me to allude to three instances. The first was a lady, who grew thin and anæmic, and was unable to nurse her child, six or eight months old. I insisted upon the loss

of a central incisor. She insisted upon keeping it. The tooth was finally extracted, and she came three weeks afterwards to make her thanks, being in increased flesh and good appearance and the child well nourished.

Dr. Lord.—What was the condition of that tooth?

Dr. Bogue.—It was a pulpless tooth and had an abscess from that cause, and besides that the cementum was saturated with the products of abscesses for many years.

The second case was a lady who was sent to a physician for treatment of neuralgia of the neck. The physician examined her carefully and told her to consult a dentist, and sent her to me. I sent her back again. She once more returned to me. I then set to work with all the appliances I had. Finally I suspected a right lateral incisor, which she told me was filled ten years previously by Dr. Dwinelle, and had never since been operated upon. I concluded that tooth was the offender, and it was so proven. On opening it pus was found in considerable quantity.

The third case seemed to me a most unusual one. A lady presented herself for the purpose of having two or three artificial teeth put in. She declined my advice and went elsewhere. In a year she returned, because she had suffered constant pain. She had been to seven different men. I then found that the constant strain upon the mental faculties from the condition of the teeth had so upset the patient that when the apparatus came to be adjusted it was almost useless. It has resulted in a condition which four or five surgeons have pronounced tetanic. One after another, she has lost every tooth in her mouth, and her mental faculties have been so disturbed that she has once been arrested as being *non compos mentis*.

Dr. George S. Norton.—I have just one word to say. When the gentleman who has just preceded me criticises any statement that I have made in relation to the teeth, I will acknowledge my ignorance of the subject. But when he makes the statement, or infers that glaucoma is often dependent upon reflex irritation of the fifth pair of nerves, or reflex irritation in general, I must question it most decidedly.

Dr. Bogue.—I said the symptoms of glaucoma.

Dr. Norton.—I question that. That is a theory which I believe has long since been exploded. Years ago it was held that glaucoma was dependent upon reflex irritation, but now it is acknowledged by almost all specialists that glaucoma is a local disease in the eye, and that the reflex symptoms of neuralgia are simply dependent

upon the glaucoma, not that the neuralgia is a cause of the glaucoma. That is the theory up to our present knowledge on the subject.

Dr. Bogue.—I desire to make my thanks for the correction, for that is valuable. It enables us also to bring our work down to the point. As I understand it, pain which proceeds from the teeth has a definite cause, and one can almost always find it. Exostosis I forgot in my enumeration of the three or four different causes of dental pain. We may not always be able to detect that, yet we find that the cause of the pain is local, although it may be that the symptoms appear here, there, and elsewhere; are, in fact, reflected.

Dr. Dwinelle.—Mr. President, I had supposed that glaucoma was induced by constriction of the optic nerve as it passes through the orbital foramen. I cannot say much as to the theory, but I remember that in my own practice I had several cases of glaucoma which have been manifestly influenced by treatment of the teeth. One very dear friend of mine was to have been operated upon five years ago; the doctors insisted upon it, stating that he could not retain his sight more than six or eight months longer at the utmost. But I felt encouraged otherwise. I felt that reflex action might have something to do with it, and that was the case. I was vigilant in looking after his teeth and his general health; and it is sufficient to say that perhaps our best authorities in reference to the treatment of the eye sometimes make mistakes in their diagnosis. The patient constantly improved, and his symptoms are certainly no worse now than they were four or five years ago. I believe that the operations I made upon the teeth have been exceedingly effective, and very likely have been the means of saving his sight. At any rate, the relief they gave him has been most manifest and permanent up to date.

In reference to reflex action, I think that we, as dentists, see constant manifestations of it. One familiar illustration of it is that while we are operating upon the upper teeth, the lower ones, which may be perfectly sound, sympathize with them through reflex action, and become subject to severe pain. We see it also in subduing sensitiveness of the teeth by applying caustics to the cervical regions of the teeth; immediately upon the application of the caustic to the teeth above, pain will immediately be felt below.

Referring to exostosis, we are continually witnessing most manifest demonstrations and illustrations of reflex action from exostosis affecting not only the ear and the nasal passages, but the eye as well. I remember an instance now that came under my observa-

tion, where a person had a very bad case of exostosis of the first left superior bicuspid; she became nearly blind in the eye corresponding to it. She was impressed with the idea that it proceeded entirely from that tooth. I was reluctant about removing it, for I had already placed an artificial crown upon it, and was desirous of retaining it. I believe that Europeans say American ladies are distinguished by having lost their superior bicuspid teeth; at any rate, they are careless about losing them. But in this instance, when I removed this tooth, very reluctantly, I found a marked case of exostosis. The extraction gave her immediate relief, and she has already nearly recovered her eyesight. Not only was the eye affected internally, but the conjunctiva and the external eye generally. The first cloudy indications of cataract were manifest to a marked degree. All those unhappy symptoms subsided. It is nearly a year since the operation, and all indications are favorable to date.

I am very glad that the subject of reflex action has been introduced to our attention to-night, and I wish to thank the essayist personally for it. The nasal passages are very materially affected by the teeth, and *vice versa*. Any interference with, or obstruction of, the nasal air-passages is a very important matter, and we ought to take it into consideration in a way that we have not heretofore. It is a field well worthy of patient investigation. Obstruction or interference with the air-passages has much to do with the mal-growth and deformities that continually arrest our attention. The reflex action and mechanical effects upon the teeth and jaws, from *adenoid vegetations* in children, thereby closing the nasal passages and compelling mouth-breathing exclusively, is a subject which as dentists should merit our most serious attention.

It is well known that the *naso-pharyngeal cavity* obtains but small recognition from our profession, whereas, it is often the almost exclusive region from which the most serious deformities of the teeth and jaws have their origin.

Dr. Woodward moved a vote of thanks to Dr. Peck for his very interesting paper. Seconded by Dr. Perry. Amended by Dr. Bogue to include the gentlemen who participated in the discussion. Adopted as amended.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

Editorial.

SOCIETY MEETINGS.

THE Illinois State Dental Society held its twenty-sixth annual session at Springfield, May 13 to 16, inclusive. This society is one of the oldest in the United States, being, however, two years junior to the Iowa State Society, which held its regular meeting one week previous. The Illinois State Society has been considered one of the best working societies in the country, and this session was no exception to the rule. It was six years since it had been our pleasure to meet with this body, and we were impressed with certain changes that had come over it. The St. Louis delegation used to be out in full force. It was, however, noticeable this year for its absence. The Ohio delegation, led by Drs. Taft and Smith, also failed to put in an appearance. The meeting was one composed largely of home talent, and not all of that was out, Drs. Allport, Marshall, and Talbott being conspicuous by their absence. Nevertheless, the meeting was a good one and fully in keeping with former years. The papers were good, but, with one exception, there was a dearth of interest in their discussion. The clinics were numerous and up to the usual in interest. It was a scientific meeting, and many remarked the lack of interest in the display of dental goods. The S. S. White Dental Manufacturing Company had no stock on exhibit. The remark was common that the dealers did not sell enough to pay their expenses.

The Society numbers one hundred and forty-three active members, with only one death during the past year, that of Dr. S. M. Sturgis, of Quincy.

The forenoon was taken up by the discussion of the proposed change in the constitution and by-laws, which contemplated vesting in an executive council, composed of nine members and the president, secretary, and treasurer, the entire business of the society, thus leaving the time of the main body free for the consideration of scientific questions. This move was strenuously opposed by Drs. Stevens, C. Stoddard Smith, and A. E. Mattison as undemocratic and tending to centre too much power in the hands of a few individuals. The measure was finally adopted as proposed, and hereafter all business, including the nomination of the officers and the choosing

of the place of meeting for the following year, will be left to the council, which is to be geographically distributed over the State.

The members of the council are C. P. Pruyn and George H. Cushing, Chicago; J. W. Cormany, Mt. Carroll; K. B. Davis, Springfield; Charles Henry, Jacksonville; J. J. Jennelle, Cairo; W. T. Magill, Rock Island; J. D. Moody, Mendota; W. H. Taggart, Freeport. This is a move in the right direction if the council can be kept free from political rings. The time of many societies is often taken up by business to such an extent that little is left for the consideration of scientific subjects.

The president, Dr. Thomas W. Pritchett, of Whitehall, spoke in fitting terms in his address of the individual work of the members of the society since its organization in the direction of higher education, which he said was fast becoming an accomplished fact.

Dr. Thomas L. Gilmer, Chicago, gave a clear and logical review of the past year's work in dental science and literature. In discussing this paper, Dr. J. J. R. Patrick, Belleville, made a characteristic speech, claiming that all dental societies should withdraw the publication of their proceedings from journals published by manufacturers of dental goods.

Dr. G. V. Black spoke interestingly on the crania of the mound-builders and early Indians. Dr. Patrick objected to the distinction made by Dr. Black, holding that they were one and the same race and lived at the same time.

Dr. S. Finley Duncan read an interesting paper relating to higher education, deprecating the abuse of colleges advertising in an unprofessional manner for patients and students, claiming that it had a bad effect upon the latter.

Dr. Sudduth occupied one evening session of the society with an illustrated lecture on oral pathology, confining his attention to the micro-organisms found in the oral cavity.

Dr. Black, in opening the discussion, spoke appreciatively of the character of the work presented, and approved of the special manner of illustrating a most difficult subject to large classes.

Dr. J. J. R. Patrick read a scholarly paper on "The Second Period of Dentistry," which was listened to with the closest attention. Dr. Patrick is a close student, and his writings are generally of a character that will live. If more men in the profession wrote from the same stand-point, dental literature would have a less evanescent existence.

The society elected Dr. Brophy as president, and adjourned to meet in Bloomington, Ill., the following year.

Foreign Correspondence.

TO THE EDITOR:

Copper Amalgam.—I observe from a perusal of dental journals that the subject of copper amalgam has of late years received a great deal of attention from dentists in America; that many instructive articles have been written concerning it; and that several new or improved makes of this material are now on the market. For the last six years I have used a considerable quantity of copper amalgam, known here as Sullivan's cement, and which has for very many years been extensively used in this country. During this period I have filled quite two-thirds of all cavities in molar teeth with it, and I have therefore thought that some account of my experience with it may be useful as a slight addition to what has already been written on the subject, although much that I have to state has been observed by others and frequently discussed.

Sullivan's cement has been described as a dirty compound, certain to blacken teeth, and fit to be used only in the mouths of those whose uncleanly habits contraindicate the performance of æsthetic operations, or in those of poor patients who cannot pay for expensive work.

This sweeping condemnation is not borne out by the experience of those who have used it carefully, and has its origin, I think, in the careless, unskilful operations of dentists who inserted it into cavities only half cleaned out. Many of these careless operations, however, preserved teeth for a considerable number of years, and gave the material at the same time both its good and its bad name.

Providing that a cavity is prepared as it should be for a gold filling,—viz., the walls and floor formed of sound, hard dentine (or the floor, if soft dentine is left as pulp protection covered with a white cement),—there will be no discoloration of the tooth unless the walls are so thin that the filling shows through them, and this is not in itself discoloration.

If, however, the decay is not thoroughly removed, or if the dentine is more or less soft, the copper salts will harden this decay or soft dentine and turn it a dark color. The resulting discoloration of the tooth will therefore greatly depend on its structure and on the thoroughness of the excavation.

There appears to be a considerable difference of opinion as to

whether copper amalgam shrinks or not. I have never yet seen a case in which this could be noticed by an examination of fillings in the mouth. I have occasionally extracted teeth containing large fillings of either copper or alloy amalgams which were preserving the teeth perfectly as far as they were concerned. In a few of these cases I have split the teeth and removed the fillings intact. I noticed that when the filling was of copper its interior surfaces were of a dark-grayish hue, very similar to the pellets as received for use, the exterior surface being as usual quite black. In alloy fillings, although in some cases the exterior surface was clean and bright, the interior was perfectly black. The cases here alluded to are too few in number to "swear by," but they are instructive as far as they go, the gray hue of the copper proving that no moisture had been admitted to cause oxidation, while the blackness of the interior surfaces of the alloy shows, on the contrary, the result of leakage. It is unnecessary to enter into details of why I extracted teeth containing good fillings, but I may mention that it was usually in cases where pulps had died some long time after capping, and circumstances prevented removal of fillings and treatment.

All who write or speak about copper amalgam allude to the surface wasting, but I have not noticed any allusion to what I consider far more serious,—viz., a wasting away at the cervical edge.

This does not appear to occur nearly so frequently as the surface or general wear. In fact, it may be said to be the exception, while the latter is the rule, but, nevertheless, it occurs sufficiently frequently to be very annoying and to make one doubt the policy of placing a layer of copper amalgam at the cervical margin when filling with some other material.

As an illustration I will describe the following case: About three years ago my brother had several teeth filled by one of the staff of the Dental Hospital, London. In the second right lower molar a large copper amalgam filling was inserted. The whole of the mesial surface was filled, and it also extended half into the crown. On the mesial surface it extended to the edge of the gum, but not below it. The first molar had been extracted some time previously, and the space is now undiminished. I examined this filling about a year after it was inserted and found that there was a distinct wasting away at the gum line, forming a trench or gutter at this part. I scraped it out with a spoon excavator and found I could easily remove the soft, disintegrated filling. This soft layer was not of any very great depth, and I found it necessary to drill a few retaining pits before repairing.

The drilling of these pits was accomplished with difficulty owing to the extreme hardness of the main body of the filling. I then filled up the gutter with Sullivan's cement. A year subsequently I found that my patch had wasted away and the gutter seemed deeper than before. I then patched with an alloy amalgam. In another year,—viz., last September,—I found the alloy patch in place, but from the upper edge of it the copper filling had been wasting away at a rapid rate. It was so soft that I scraped the whole of the mesial surface away with a spoon excavator, and also right under the coronal surface (which was hard), and this I easily removed with an upward push. This appears to be quite unconnected with the ordinary or surface wasting. It is worthy of notice that, owing to the absence of the first molar, there was no possibility of food lodging against the surface of this filling or the oral fluids stagnatory there.

I have for some time past been using one of the new American copper amalgams, hoping that this might not occur with a better preparation, but it requires an observation of several years to find this out. I missed a grand opportunity of testing the American preparation by not refilling my brother's tooth with it, but I thought he had already swallowed as much copper as was good for him.

I have come to the conclusion that a copper amalgam filling saves teeth of good structure simply because it makes a good tight plug; that in teeth containing soft dentine it also saves by hardening it and preventing decay taking place *under* the filling, but that it possesses no power whatever to prevent decay from external causes. That is to say, that if decaying influences collect around the margin of a copper filling, they are just as likely to cause decay as if the tooth were well filled with gold; neither more nor less. The progress of the decay may perhaps not be so rapid when once the outer wall is cracked, but he who thinks that the antiseptic properties of copper amalgam will form a zone of protection around the margins of the filling will be speedily undeceived; at least, such is my experience.

There are alloys on the market which are stated to be improved by the addition of a little copper. Why not add a little of something to the copper amalgam with the object of preventing this surface and cervical wasting, without impairing its antiseptic properties or causing it to shrink. Surely this is not beyond the skill of our chemists.

WILLIAM C. GRAYSTON.

SCARBOROUGH, ENGLAND.

Domestic Correspondence.

TO THE EDITOR:

Illinois State Board of Dental Examiners.—A Correction.—At a meeting of this Board, held at Springfield, May 15 last, attention was called to a statement in the May number of this JOURNAL (p. 319),¹ to the effect that this Board had conducted the final examinations of the graduating classes of the University Dental College. This not being the case, the secretary was instructed to inform the editor as to the facts, and to deny the implied statements.

The facts are that the faculty of the college named did invite the Board, through its secretary, to conduct their examinations. The secretary and Dr. Koch, who constitute a committee to examine into the working of the colleges of this State, declined most positively to do so. They consented, however, to be present as spectators, as a committee of the Board, for the purpose of gaining information, and were present for that purpose only. The Board ratified the action of the committee by declining to conduct any examinations, and informed the college that they would be present only as spectators for the above purpose when convenient.

C. STODDARD SMITH,

Secretary.

CHICAGO, ILL.

¹ The "item" referred to in the above letter was forwarded to us by our regular Chicago correspondent, and was intended for the April issue. It read, "By a vote of the faculty and also of the graduating class, the Illinois State Board of Dental Examiners *have been* requested to conduct the final examinations of the graduating class. The examinations of the State Board *will be* an oral in addition to the regular written examinations conducted by the Faculty." It did not reach us in time, however, for the April issue, and as the examinations were set for the 29th of April, and as we did not hear from our correspondent that the examinations had not taken place, as announced, we took the liberty of changing the tense and making what had been an announcement an accomplished fact. We fail to see any just reason why any State Board should refuse to conduct the examination of any institution when requested so to do. It marks a step in advance and should be heralded with pleasure. The college, however, should set aside a portion of the examination fees to meet the expenses of the Board. Speed the day when the final examinations of all our colleges shall be conducted by State or National Boards. Then will the power granted to certain institutions under the so-called "vested rights" be minimized and dental education take the stand it should.—ED.

Current News.

THE St. Louis Dental Society, at a meeting held on April 1, passed the following resolution:

Resolved, That the St. Louis Dental Society favors holding the next meeting of the association at Excelsior, Mo., the original choice of its members.

The members, in an informal way, expressing a willingness that a change of date, to the week following the meeting of the Missouri State Dental Association, be made, our State meeting will be held on July 8, 9, 10, and 11.

The Society was also presented the "Call for an International Dental Congress" in 1892; it was laid on the table. It favors a memorial meeting of the American Dental Association in the year of the World's Fair.

JOHN G. HARPER,
President, St. L. D. S.

CHICAGO DENTAL SOCIETY.—At the annual meeting of the Chicago Dental Society, held on Tuesday, April 1, 1890, the following were elected officers for the ensuing year: President, C. N. Johnson; First Vice-President, C. H. Thayer; Second Vice-President, I. A. Freeman; Secretary, A. E. Baldwin; Corresponding Secretary, T. L. Gilmer; Treasurer, E. D. Swain; Librarian, A. W. Harlan; George H. Cushing to succeed himself on the Executive Committee; C. F. Hartt, E. A. Royce, and S. B. Palmer, Board of Censors.

T. L. GILMER,
Corresponding Secretary.

DENTAL SOCIETY OF THE STATE OF NEW YORK.—The following were elected officers, May 15, for this current year: President, W. W. Walker, New York City; Vice-President, G. L. Curtis, Syracuse, N. Y.; Treasurer, H. G. Mirick, Brooklyn, N. Y.; Secretary, F. T. Van Woert, Brooklyn, N. Y.; Correspondent, B. A. R. Ottolengui, Brooklyn, N. Y.

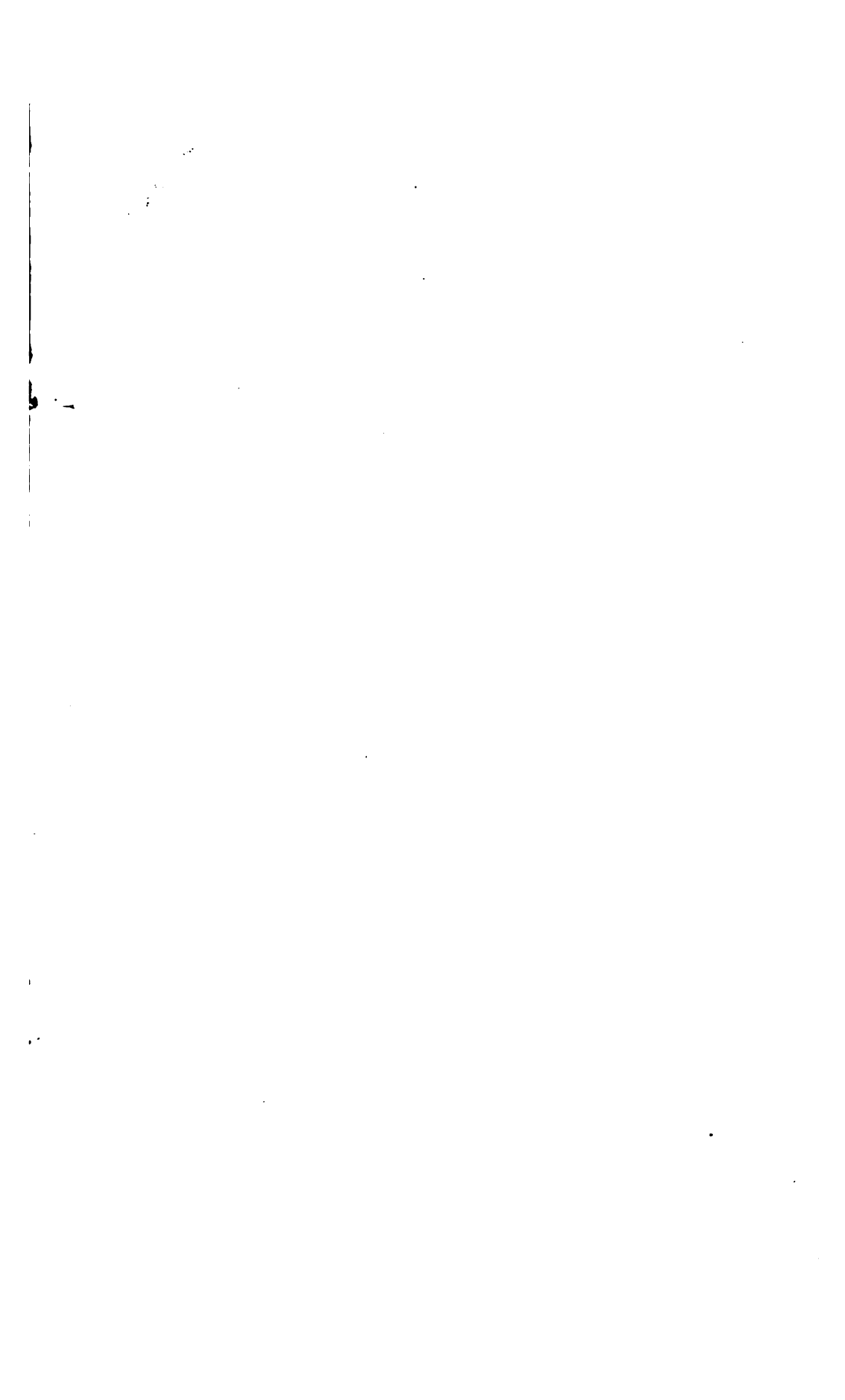


FIG. 1.

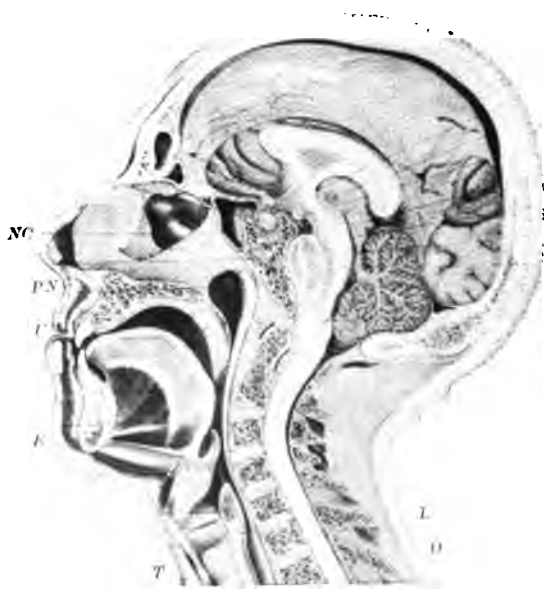


FIG. 2.



NC, nasal cavity; PN, posterior nares; U, uvula; E, epiglottis; L, larynx; T, trachea; O, oesophagus; ET, Eustachian tube.

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Original Communications.¹

ORAL DEFORMITIES AND THEIR CORRECTION.²

BY KASSON C. GIBSON, NEW YORK, N.Y.

IN the preparation of this paper no attempt has been made to give a history of what has been written on this subject, or a description of appliances used by others, either for the restoration of speech in acquired lesions or for the improvement of articulation in congenital defects; but briefly to describe the methods employed in making and adapting appliances for a few special cases, which have come under my care.

Defects of the palate, hard and soft, are acquired or congenital.

The former are caused by a pathological change of structure (gunshot or missile), and may be divided into three classes:

First, Consist of perforation of the vault of the palate.

Second, Perforation of the velum.

Third, In the entire destruction of the vault of the palate, or a great portion of it. To this last might also be added the destruc-

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Specially reported for the INTERNATIONAL DENTAL JOURNAL from a paper read by Kasson C. Gibson, of New York City, before the Maryland State Dental Society, December 5, 1889, on "Obturator for Acquired and Congenital Defects of the Hard and Soft Palate."

tion of the whole or larger part of the velum, as well as the vomer, part of the alveolar border, and turbinated bones.

Congenital defects are the result of malformation or imperfect development of the parts. These occupy the median line, and consist in a division of the osseous and soft textures of greater or less extent.

This division is sometimes confined to the vault of the palate; at other times the velum, the anterior part of the alveolar arch, and the upper lip may be imperfectly developed. It may form a communication with both nostrils, and, when the malformation extends to the alveolar border and upper lip, the latter, divided vertically in one and sometimes two places, gives to the mouth a most disagreeable aspect.

The hare-lip is sometimes met with when there is no imperfection of the osseous structure, and imperfections are often met with here when the lip is perfect.

In some cases the cleft or fissure is more than three-fourths of an inch in width throughout the whole extent of the palate and velum, extending through the whole of that portion of the alveolar border which should be occupied by four incisors; at other times the alveolar arch is divided in two places, leaving a portion between the lateral and central incisors, or one lateral and one central incisor, which, projecting more or less, greatly increases the deformity.¹

Although a double hare-lip with two divisions of the alveolar border is seldom met without some defect of the palatine organs, cases do occasionally occur.

Congenital defects of the palate are sometimes accompanied by more or less deformity of the sides of the alveolar arch and of the teeth.²

¹ This classification of acquired and congenital defects of the palatine organs is after Delabarre.

² In this connection, it is deemed appropriate to present the following cases of compound complicated hare-lip with cleft palate, which were operated on by Professor James L. Little, of New York City. These cases are of peculiar interest, due to the fact that all were complicated, occurring in the same family, and were not operated on until early manhood.

I quote the following from Dr. Little's pamphlet:

"These cases will be described in the order in which they came under my observation.

" William Bocock, aged twenty-one.

" John Bocock, aged nine.

" Charles Bocock, aged eighteen.

When the fissure extends through both the hard and soft palate no benefit is derived in articulation from staphyloraphy; where the soft palate only is involved this operation is rarely successful so far as articulation is concerned, as the palate is contracted, bringing it forward and too greatly increasing the space between it and the pharynx.

In both congenital and acquired cases the principal effects resulting from the absence of a portion of the palatine arch are impairment of the functions of mastication, deglutition, and speech. In the former the habit of breathing through the mouth is often added, and consequent otalgia.

The last fact was brought to my notice about ten years ago by Dr. D. B. St. John Roosa, aurist, of New York, who advised the wearing of an obturator, even if normal breathing were the only benefit derived. The following case is illustrative:

In March, 1882, Miss A., aged about thirty, having congenital fissure of the soft palate, and a mouth-breather, had suffered from childhood during the winter months with earache, and in consequence had almost totally lost her hearing. She was advised to have an obturator; this was constructed of hard rubber. The

"No hereditary tendency can be traced in father's or mother's family. There were four boys and five girls. All the boys were born with hare-lip, while no deformity existed in any of the girls.

"The order in which the children were born is as follows:

"1. William: Compound complicated hare-lip.

"2. Girl with no deformity.

"3. Charles: Compound complicated hare-lip. A spindle-shaped sarcoma made its appearance on the left side of the perineum in 1878, which I removed. It recurred, and I again removed it in 1882.

"4. Girl with no deformity.

"5. Girl with no deformity.

"6. John: Compound complicated hare-lip. Absence of ring finger on right hand.

"7. Girl with no deformity.

"8. Girl with no deformity.

"9. Boy with single hare-lip, who died in infancy.

"These patients presented this deformity in almost the worst form possible, the arrest of development occurring at a very early period of fetal life.

"The inter-maxillary bone in each case was distinct, being ununited to the superior maxillaries, and was continuous with the nasal septum and vomer. The projecting bone was partially covered by a tag of integument which was continuous with that of the tip of the nose.

"In John (Case 6) the bone contained two well-developed incisor teeth, while in William and Charles (Cases 1 and 8) there was but one.

patient, after wearing the appliance seven years, stated she had been relieved of earache, but her hearing had not improved. It was a surprising fact that her articulation had become nearly perfect notwithstanding her inability to hear her own voice.

A young man with a congenital fissure of the soft palate, who had been wearing a hard rubber obturator for four or five years, met with an accident which necessitated the repairing of a clasp. Failing to call at the appointed time, he gave as his excuse, on calling several days after, that he had caught cold and had been suffering from earache, the first time since wearing the appliance. Unknown to me he had been afflicted with earache from childhood. At his suggestion a duplicate of the obturator was made for use in an emergency.

In these cases hard rubber, being a non-conductor, should always be used instead of metal.

In acquired lesions, where the uvula and velum have been destroyed and a properly-fitted obturator substituted, the readiness with which articulation is restored is due largely to the more developed power of the tongue, also of the constrictor muscles of the pharynx.

On the other hand, congenital fissures of the palate present far greater obstacles, it being very difficult to adapt an artificial organ so that power is given to acquire perfect speech, when from defect of the natural organ the patient from birth has been incapable of distinct utterance.

"There was a complete absence of both the hard and soft palate in all three cases, and in Case 6 the fissure was unusually wide (4 centimetres).

"Articulation was so imperfect that they could be understood with the greatest difficulty. . . .

"In concluding this paper I desire to say a few words regarding uranoplasty and staphylorrhaphy. I had performed these operations successfully before operating upon the case described in the first part of this paper. Since that time I have carefully looked into the results and find that although in a large proportion of the cases the operations are successful so far as the closure of the fissure in the hard and soft palate is concerned, yet so little, if any, benefit is obtained in the improvement of the articulation that I have been forced to the conclusion that they should be discarded as surgical procedures in adults. I refer, of course, to cases in which the cleft is congenital. Mr. George Pollock says, 'The real object of the operation of closing the cleft in the palate is to enable the patient to articulate hereafter plainly and intelligibly,—*not* to enable the child to take food.' "

It has recently been brought to my notice that a boy born to the eldest girl in the family has a compound complicated hare-lip, the exact counterpart of Case 3.

It is possible, even in these cases, after an obturator has been properly adjusted, to so educate the tongue and constrictor muscles of the pharynx that they will be able to perform functions, they never would have been required to exercise in conjunction with perfectly-developed organs.

The successful results, however, depend largely on the intelligence and efforts of the patient to learn to articulate properly.

Obtulators have been made for congenital fissures, enabling the wearer to articulate with distinctness.

Lessons in elocution will prove of great assistance to the patient. The method employed in teaching deaf mutes to articulate has been applied to these cases with satisfactory and more permanent results.

In simple cases of congenital fissures, correct articulation is acquired more readily than in complicated ones. In the latter, when a defective lip, enlarged nostril, or both, exist, combined with a deformity of the hard and soft palate and very often with imperfect occlusion of the teeth, the difficulties are greatly augmented.

With these abnormal conditions the construction and adaptation of an appliance becomes proportionately difficult.

In view of these facts it is not advisable to always hold out positive assurance of success.

Obtulators prove of great benefit in other ways even if improvement in articulation is not marked.

They should, if possible, be secured by clasping, thus preventing any possibility of the appliance becoming loose and dropping into the œsophagus. For the natural relationship of the parts, see frontispiece.

Figs. 1 and 2 of plate are from plates taken from the "Atlas of Topographical Anatomy," by Wilhelm Braune, Professor of Anatomy, in the University of Leipsic.

These figures show the organs of speech in their true normal position, and a careful study of them and their relative positions to one another will greatly facilitate the proper adapting of an appliance.

Fig. 1 was taken from the body of a powerful, well-built, perfectly-normal man. The organs exhibited no pathological irregularities. The body, which was brought in unfrozen, was placed on a horizontal board without any special support for the head. In this position the subject lay in the open air at a temperature of about 50° F. for fourteen days. At the end of this time the process of freezing was completed.

The mesial line of the body was next accurately marked out anteriorly and posteriorly with a black line, and the section carefully performed by means of a fine-edged saw, much in the same way as two workmen would saw the trunk of a tree.

Fig. 2 was a section made on the body of a finely-formed woman, which was brought into the dissecting-room immediately after death. The arteries were injected with paint and the body laid on the back and frozen and the details of the section carried out as in the first case.

The following cases are instructive as to the treatment adopted in their correction.

Female, aged thirty-five. Syphilis acquired. Perforation about the size of a pea, near the centre of the upper jaw left of the median line. All the teeth had been extracted except the central incisors, second bicuspid, second molar on left side.

Previous to taking impression in plaster of Paris, the tissue about the perforation was wiped dry, a piece of adhesive plaster about the size of a five-cent piece was accurately fitted to cover the perforation, thus preventing plaster from passing through.

After adjusting, this was oiled to prevent the plaster of Paris from adhering.

A plate was made of rubber covering the perforation, but not extending into it with teeth to supply the ones which had been extracted. If the lesion due to disease is simple, the plate or obturator should bridge across, but not extend into perforation. If the uvula and velum are destroyed, the obturator should be fitted anterior or posterior to the opening.

In all cases due to disease the appliance should be so constructed and adjusted as to avoid irritation.

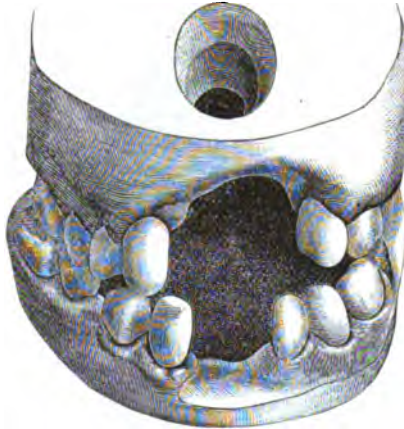
1872. Boy, aged eleven. Hereditary syphilis. Nearly all the vomer and nasal bones destroyed. Perforation about centre of hard palate on median line about three-fourths of an inch in diameter. The maxilla anterior to perforation had been partly destroyed by disease, the remainder had been removed; also the incisors on the right; the incisor, cuspid, and first bicuspid on the left. (Fig. 3.)

Three of the incisors on the lower jaw had never developed. A rubber plate was made bridging across the perforation fitting the lingual surface of the teeth, with teeth attached to supply the missing ones.

1874. Male, aged sixty. Syphilis acquired. Perforation two by one and one-fourth inches in diameter with a circumference of five and one-fourth inches, through hard and extending into soft

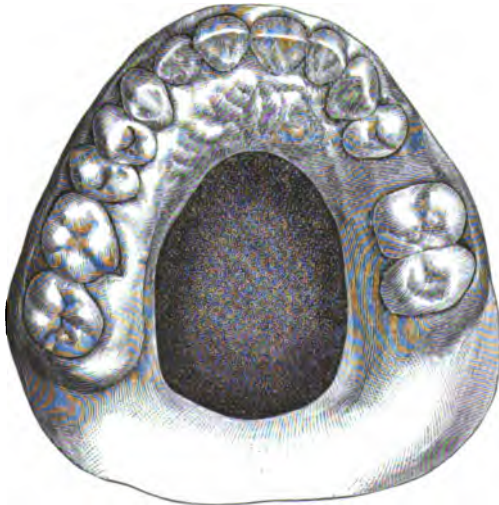
palate. Nearly all the vomer and nasal bones destroyed. About ten or twelve years previous to 1874, the perforation about the size

FIG. 3.



of a pea, patient commenced using plugs of cotton renewed daily; the expansion of the cotton increased the dimension of the opening. (Fig. 4.)

FIG. 4.



These cotton plugs restored articulation and prevented liquids passing out the nose.

Plate made of hard rubber bridging across the perforation, fitting lingual surface of the teeth, clasped to first bicuspid on the left (second one missing) and around last molar on right side. (Fig. 5.)

FIG. 5.



To obtain an impression for the obturator in a congenital case no special tray is required, provided it is not unnecessarily large. The impression should be taken in plaster of Paris of the entire hard palate including the teeth. There is no necessity of its extending beyond the posterior border of the hard palate, *no impression* of the fissure of the soft palate being required.

When the hard palate is perforated no impression above the fissure is required; exception is made if teeth are lacking or incapable of giving support.

In taking an impression above the fissure in the hard palate (congenital cases), as a rule, fill the entire cavity with modelling composition, marking the lower surface with ridges or holes.

After this has hardened, and without removing it, procure an impression in plaster of Paris of the entire upper jaw, including the teeth.

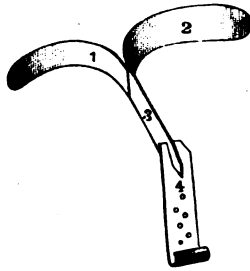
Remove the plaster impression, then the composition, placing the latter in position on the plaster. An accurate impression is thus obtained.

Before this procedure make a careful examination of the teeth, and if none are missing nor any space between them, wedge apart the second bicuspid and first molar on each side for the purpose of

clasping. These, when strong and free from decay, should always be used.

The clasps (Fig. 6) to be made of clasp gold, fitting the buccal

FIG. 6.



surface of both bicuspid and molars, extending between the teeth and vulcanized in the rubber.

The plate should cover the roof of the mouth, fitting accurately the lingual surface of the teeth posterior to the first bicuspid in all cases where the fissure does not extend through the hard palate.

FIG. 7.



If the cleft involves the hard palate, the plate should cover the opening, not extending above the floor of the nasal cavities, except in case of needed support. This, when required, may be accom-

plished by allowing the plate to extend above and beyond the fissure.

The length of the fissure may be obtained by a strip of gutta-percha about one-fourth of an inch wide, held in position with tweezers at the median line of the anterior end of the fissure, and moulded to conform to the curve of it.

Clasp gold (No. 23 gauge) is cut in length and bent in form to correspond to the gutta-percha. This should be vulcanized in or attached to the plate, extending along the median line of the fissure and elevated about one-eighth of an inch above it. (Fig. 7.)

Fig. 8 shows a gold plate with clasps, and the gold attachment soldered to it.

FIG. 8.



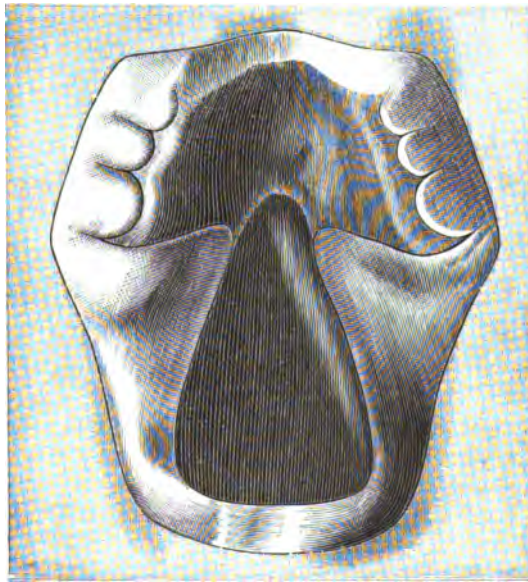
A preparation of three parts beeswax, two of paraffin, should be moulded around this gold attachment, inserted, then remoulded, then reinserted, until an obturator is formed about one-eighth of an inch in thickness, and, if the muscles and tissue will admit, one-eighth of an inch wider than the fissure above and posterior to it, extending backward nearly to the pharynx and downward, terminating at the extreme end of the fissure. This will bring the obturator nearly in contact with the dorsum of the tongue. If, in modelling, the tissues become irritated and nausea is produced, it may be delayed a few days, or the palate or pharynx may be sprayed with a solution of cocaine.

This waxed obturator should be worn by the patient a few hours; the temperature of the mouth will soften the wax sufficiently to admit of the muscles adapting themselves to it.

Reproduce this in hard rubber. In all cases retain one-third of the gold for the better attachment of the obturator to the plate, and bend in the form of a hook or drill holes through it. To avoid porosity and weight the obturator is sometimes made hollow. To do this impressions should be taken in plaster of Paris of the wax obturator and reproduced in type or Babbitt metal.

Figs. 9 and 10 show how type metal may be embedded in plaster of Paris in a square flask, and both plate and obturator reproduced. (Fig. 11.)

FIG. 9.

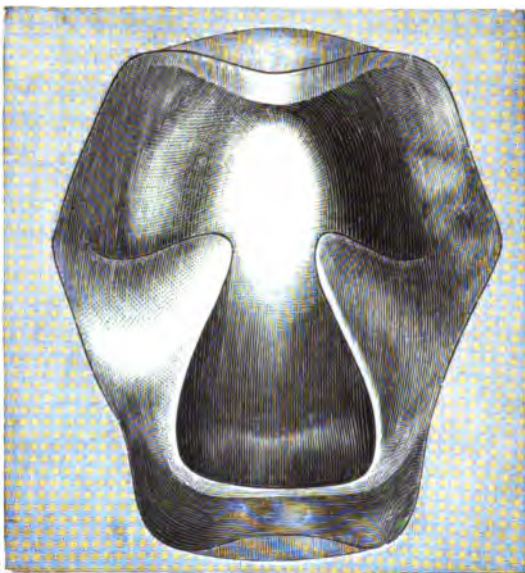


The process is as follows: First pack the space around the gold in the ordinary way. Two sheets of rubber are then cut to correspond to size of the mould. The edges are moistened with a preparation of rubber and naphtha or rubber and chloroform, by which they are joined firmly together; before the last opening is closed a small quantity of carbonate of ammonia is put inside, which, when subjected to heat in vulcanizing, will cause the rubber to expand and fill out the mould. This must be of metal to resist the pressure due to expansion.

The surface of the mould should be soaped before the rubber bag is placed in position for vulcanizing, to prevent rubber adhering.

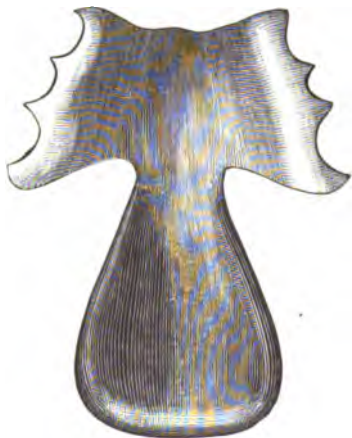
When the mould is opened after vulcanizing, it will contain a perfect hollow bulb, with no marks of the places where the pieces

FIG. 10.



of rubber were joined, with the exception of a slight ridge made by the mould.

FIG. 11.

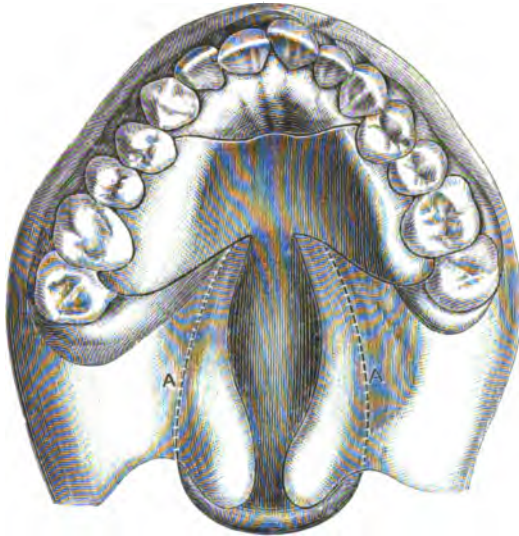


This bulb is finished in the same manner as a rubber plate.

Fig. 12 represents the appliance in position. A, A, the position of obturator above the fissure.

1877. The next case was a boy, aged six weeks. Congenital; fissure extending through hard and soft palate; hare-lip on right side. Patient etherized for purpose of operating on lip; previous

FIG. 12.



to this operation an impression was taken in plaster of Paris of hard and soft palate including the fissure. (Fig. 13.)

In cases where the fissure involves the hard and soft palate it is advisable, as soon as possible after the development of the deciduous teeth, to make an appliance bridging across the cleft of the hard palate.

This will prove of benefit both in mastication and articulation, and will prevent liquids from passing out of the nose, and assist in acquiring the habit of normal breathing. The appliance may be completed when the child is old enough to be controlled.

When there is a fissure involving only the soft palate, an obturator should be adapted at an early age (six or seven years). While this appliance will only be temporary (until the development of the permanent teeth), it will greatly aid the acquiring of proper articulation.

1877. Male, aged twenty-eight. Congenital. No hare-lip.

Fissure extending from a point corresponding to the second bicuspid, along the median line through the soft palate.

The appliance of hard rubber, with the bulb hollow. The plate covered the roof of the mouth posterior to the cuspid teeth extending back to the second molars, and fitting the lingual surface of the bicuspid and first molars. (Illustrated in Figs. 11 and 12.)

Previous to this, water and alcohol had been used for inflating the bulb with variable results. After experimenting, carbonate of ammonia was substituted, thus rendering the inflation certain.

FIG. 13.



In using plaster of Paris, it was found not to be strong enough to resist the great pressure (caused by the expansion of the ammonia) in vulcanizing, and type metal was substituted.

This patient had worn for a number of years, previous to 1877, a soft rubber palate. From eight to ten duplicates were required each year, as the secretions of the mouth and fermentation of food-particles made them unfit for use after a month or six weeks wear. The condition of the throat and general health of the patient was such that his physician advised him to abandon the use of soft rubber.

For similar reasons it has been found necessary to substitute hard for soft rubber in several cases.

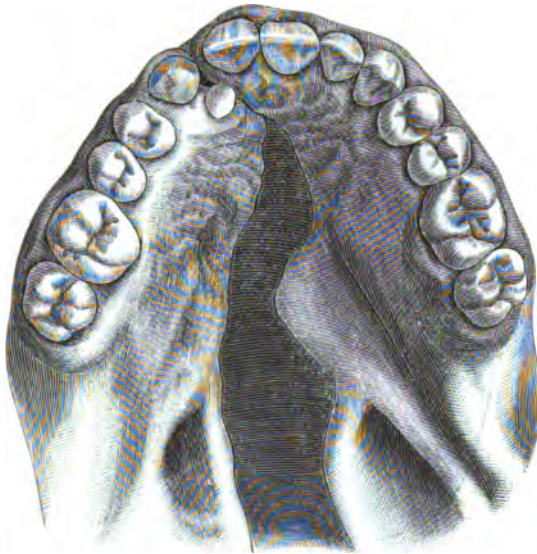
After inserting the hard rubber obturator there was a decided improvement in articulation. His throat and general health was

better, and the appliance has been worn continuously for twelve years without any annoyance or additional expense.

1877. Male, aged forty. Congenital. No hare-lip. Fissure of soft palate only; first bicuspid and first molar on the right side, lateral incisor, bicuspid, and first molar on the left had been extracted.

Plate and obturator made of hard rubber. The plate to which was added the first bicuspid on the right; the lateral incisor and bicuspid on the left were clasped on the right side to the second bicuspid, on the left to the second molar.

FIG. 14.



In this case the obturator was very thin, being only about one-eighth of an inch in thickness through the centre. The edges were rounded and somewhat thicker than the middle part. In making these thin obturators, round, smooth edges are necessary, as they are less liable to irritate.

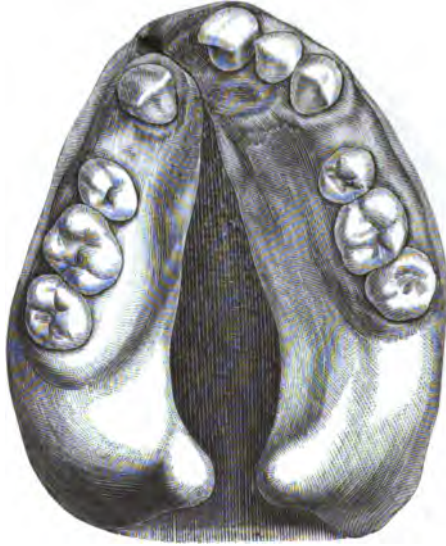
This patient was a car-driver, a man of ordinary intelligence. The appliance was the first he had ever worn, and without any special instruction he learned rapidly to articulate distinctly.

After wearing the appliance a few months, the patient reported with great satisfaction that his improved articulation was a source of much comment among his acquaintances.

1877. B., aged thirty-seven. Congenital fissure, commencing centre of hard, extending along the median line through the soft palate. Hare-lip operated on a few weeks after birth. Only teeth remaining were the cuspid and first bicuspid, left side. For nine years previous had worn a gold plate with a soft rubber palate attached. This appliance was discarded as the decomposing of the rubber caused irritation and an offensive odor; the procuring of duplicates was a source of annoyance and expense.

Gold plate with teeth attached, to replace missing ones, was made with a hard rubber hollow bulb attached.

FIG. 15.



The appliance was worn with comfort and improved articulation.

1878. Male, aged nineteen. Congenital. Hare-lip on right side; operated on a few weeks after birth; fissure extending through hard and soft palate. Lateral incisor right side missing; supernumerary tooth back of cuspid tooth. Three attempts had been made to close the fissure by operations. (Fig. 14.)

Obturator made of hard rubber and hollow. The benefit derived from wearing the appliance was greater than had been anticipated, and the improvement in articulation marked.

1881. Female, aged eighteen. Hare-lip on right side operated

on a few months after birth. Congenital. Had come from England to have an appliance made. The lip was imperfect, the nostril enlarged. Occlusion of the teeth very imperfect. First bicuspid had been extracted; the central and lateral incisors on right side never developed. The articulation was so imperfect that she could only be understood with difficulty. (Fig. 15.)

The appliance was of hard rubber with one lateral incisor and the bicuspid attached, bridging across the opening, extending back to the second molars fitting the lingual surface of the teeth, and secured with clasps.

The obturator was about one-eighth of an inch in thickness with the edges rounded. Shortly after the appliance was fitted the patient placed herself under the care of Miss Warren, of New York City, a teacher skilled in instructing deaf mutes to articulate. The results were wonderful. Her articulation became nearly perfect.

Seven years after the appliance was made she returned to this country for the purpose of having a duplicate. This was made the same as the first, with the exception that it was about one-fourth of an inch longer.

The patient was more than ordinarily grateful, for after wearing the appliance, her improved articulation enabled her to enter society, from which she had previously been debarred.

1879. Male, aged fifteen. Congenital fissure of soft palate extending into the palate bone.

A plate was made of hard rubber covering the roof of the mouth posterior to the first bicuspid, extending back to the twelve year molars, fitting the lingual surface of the teeth and clasped to the six-year molars.

The obturator also of hard rubber, solid, about one-fourth of an inch in thickness, rounded at the edge, and attached to the plate at the junction of the hard and soft palate by a hinge. This hinge was used to bring into action the levator palati and the superior constrictor muscles, thus cutting off nasal communication at will, and was made of platinum and iridium, these metals being less likely to corrode.

This advantage was more than counterbalanced by the annoyance caused by food-particles becoming lodged in the hinge-joint, impeding its free movement. Its use has been entirely discontinued, except in cases where a full set of artificial teeth is worn, as the action of the hinge, in speaking, eating, or drinking, prevents displacement of the plate.

1881. Male, aged thirty-three; congenital fissure; no hare-lip. Fissure extending along the median line from a point corresponding to the twelve-year molars, through the soft palate. (See Fig. 7.)

This patient was wearing an appliance, consisting of a metal bulb with a plate as follows: "The roof of the mouth being very high in the centre, the cast was filled up at that point so as to bring the golden roof at a lower level and make the dome more symmetrical and better formed for enunciation. Subsequently the span above the gold was filled with vulcanite."

This form of plate had proved of no advantage in enunciation; on the other hand, the weight was increased; this increased weight and the imperfect clasping of the plate rendered it less firm and caused unnecessary wear on the teeth.

A new plate was made of twenty-carat gold (No. 27 gauge), fitting accurately the roof of the mouth from the second bicuspid, including the second molars on each side, fitting the lingual surface of the teeth, and clasped with a double clasp to the bicuspids and molars on each side. To this plate was attached the bulb previously worn.

About six months ago a new plate and obturator were made. The plate a fac-simile of the last one described. The obturator was of hard rubber, very thin, with rounded edges.

This appliance was made for a gentleman of high social standing, superior intelligence, and keen judgment.

The following communication, relating his experience, ought to carry greater weight and more positive proof of the comparative merits of different appliances than anything that can be said or written by the operator.

NOVEMBER 14, 1889.

DR. KASSON C. GIBSON:

MY DEAR SIR,—In the year 1866 it was suggested to me that I see a dental specialist in reference to an appliance for defective palate. I did so, and the specialist made for me a *soft rubber appliance*, which I used continuously until 1875. In this year he made for me a *metal bulb*, which I have used continuously from October, 1875, until this autumn, 1889. In October, 1881, eight years ago, I placed myself in your care, finding great relief from the better attachment of the appliance to the teeth, a double clasp being used, giving firmness and not such wear on the teeth; in fact, previous to October, 1881, the appliance *never at any time* set snug and close to the mouth and teeth, so that the teeth were rapidly wearing and cutting away. During the past six months you have made and fitted for me an appliance of hard rubber; this I am using now. During all these years (being twenty-three) I have used each variety and have had full experience, sparing no time, money, or pains, to get the best

results. For the first ten years I practised under an elocutionist, finding great benefit, and, at times, I still do the same.

As to the soft rubber palate, I was extremely glad to be relieved from it, because it is soft, flabby, lacking stiffness, making it difficult to use or pronounce some words clearly or distinctly, and after a few days of use becoming very disagreeable and offensive unless great attention was paid to it by boiling; in fact, two months was the limit of time comfortably to use one, and then a source of trouble in procuring new ones, which led me to vulcanize them myself in moulds made for me; this all kept up the cost, which I found was quite an item in a year.

The use of the bulb was much better, gave better control to the voice, clean and pleasant. But in my experience I found that there was *too much bulb*, it closed up too much, so that it muffled the voice, prevented the free passage of mucus, allowed food to sometimes get lodged on it, and was heavy.

In the last appliance I think the end desired has been practically reached. None of the difficulties experienced in the others are found in this. It is light in weight, clean, allowing food, mucus, and air to pass without hinderance, gives a good clear tone to the voice and easier pronunciation, so that *no one* could detect or imagine an appliance was in use, and it is a regret that it could not have been used in the beginning, twenty-three years ago, for I can see no reason why a person should not use hard rubber from the start.

Yours faithfully,

A PATIENT.

LOCAL ANÆSTHESIA BY NITROUS OXIDE: A CONVENIENT METHOD OF APPLYING IT.¹

BY G. L. CURTIS, M.D., D.D.S., SYRACUSE, N. Y.

It is not surprising that the average man or woman, being aware of the highly sensitive organization of the teeth, should dread to submit to the dental operations frequently necessary for the preservation of those organs. The trifacial, from which the teeth draw their nervous supply, has been demonstrated to be the most sensitive nerve of the entire system. There is, perhaps, no more pressing need in dentistry than a safe, reliable means for rendering dental operations painless. What is wanted is an obtundent or local anæsthetic whose effect, while certain and complete so far as its action upon the part to which it is applied is concerned, may be exhibited without inconvenience, or producing unconsciousness of the patient, and without liability of causing subsequent injurious results. Such an agent, by abolishing the pain of dental operations, would lessen

¹ Read before the New York Odontological Society, March 18, 1890.

in a marked degree the average time consumed in performing them, and be a boon to patient and dentist.

The problem has been the subject of much thought among practitioners, and many methods have been proposed to achieve the end desired; but so far the results have been only partially or varyingly successful. The recognized facts that moisture is essential to sensation and that a tissue deprived of its moisture is dead to sensation points the way to the solution, and some of the methods which have been suggested were based on this idea. But the agents offered for the purpose have all been objectionable for one reason or another. Some failed to produce complete insensibility, or were uncertain in their action; some others exercised a destructive influence upon the tissues to which they were applied; while the exhibition of still others was attended with so much suffering to the patient as practically to bar their use.

This uncertainty in the action of drugs is well known, and is due in some instances to idiosyncrasies upon the part of the patient, at other times to a pathological condition of the tissues which prevents the action of the remedy, or to a lack of affinity between the drug and the tissue or organ to be treated.

Some time ago it occurred to me that a blast of nitrous oxide, under high pressure, thrown upon a tissue might have the effect of producing local anæsthesia by depriving the tissues of moisture and thus rendering them insensible to pain. The pressure of the gas in the cylinders, in which it is supplied in the liquefied form, is at ordinary temperatures about one thousand pounds to the square inch; that is, when the cylinder is full. This is ample for the purpose. I have here attached to a cylinder an apparatus which I have devised for the application of the gas, consisting of a flexible tube of sufficient strength to withstand the enormous pressure. The gas is forced, on opening the valve, through detachable tubes of various shapes and conveyed to the cavity, where it is applied by means of an automatic atomizer.

After experimenting upon myself for awhile, I became fully convinced of the efficacy of the device and the value of the idea. I then began to use it upon others as the opportunity offered, and was delighted to find that previous observations of its effects were confirmed. Exhibited as indicated, I have employed nitrous oxide as a local anæsthetic many times in my practice, with the most gratifying results in every case except two, in one of which the patient was hysterical, and the other in such a highly-wrought state of nervous excitability that I was unable to apply the blast

properly. In order to show the difference in preparation of a cavity without and with the gas let me cite a typical case: Patient, male, aged forty-five years, had been for many years a great sufferer from nervous dyspepsia, complicated with functional derangement of the heart. At times his life was despaired of through heart failure. Without the aid of nitrous oxide, when I was excavating a cavity in one of his teeth, owing to the extreme sensitiveness of the dentine, his overtaxed and excitable nervous system gave way, his heart stopped beating, he became black in the face, and writhed in convulsions. It was only by the most active efforts that the circulation was restored and the patient revived. A temporary filling was inserted and patient dismissed.

He again presented upon a subsequent occasion with a superior central incisor, one-third of the crown of which had been lost by decay. The pulp was living, but with only a thin film of disintegrated dentine over it. On attempting to excavate, the pain produced was so excruciating that the patient, rising from the chair, declared that he would lose the tooth sooner than endure the torture. Thinking this an excellent opportunity to test the efficacy of the nitrous oxide as an obtundent, I endeavored to persuade him to allow me to try it. At length he reluctantly consented, but it was evident from the rigidity of his muscles, as he braced himself in the chair, and the frightened expression of his face that he had no faith in the success of the experiment. The blast was applied, and in three seconds the constrained look of the face gave way to a peaceful smile, and the patient exclaimed that he was free from pain. Then came a general abatement of the nervous symptoms, the muscles lost their rigidity, and the patient assumed a quiet, restful position. After applying the blast ten seconds, I began the task of removing the decay and preparing the tooth for filling, working as fast as the engine would operate the bur. The pulp was fully exposed, and a small drop of blood exuded, but the hemorrhage was checked without the aid of a styptic. In two minutes the cavity was ready. The pulp was capped and the entire filling completed without the slightest expression of discomfort from the patient, except when the gold was being finished at the neck of the tooth a half-hour later, which indicated the return of the pulp to its normal condition.

This tooth was carefully watched, and more than a year after the operation it was still in a perfectly healthy condition, and the first evidence of discomfort from it was yet to be felt. I have since treated several other teeth for the same gentleman by this method, and in each instance with equally satisfactory results.

A very similar case was that of a physician suffering from extreme nervous exhaustion, for whom I operated, under like conditions, in the same manner, except that it was not necessary to expose the pulp of the tooth. The operation was absolutely painless, and a year and a half afterwards the tooth had not manifested the slightest pain or discomfort.

Many other cases have occurred in my practice where the nitrous oxide blast was equally effective in obtunding the sensitiveness of the dentine. In fact, it has never failed of complete satisfaction except in the two instances before referred to, and these were so exceptional in their conditions that I feel that they should not be permitted to militate against the value of the treatment.

My experience is that sensation is perfectly restored to the obtunded tissue in from three to ten minutes after the application, in which respect the local action is very similar to that which follows the administration of nitrous oxide as a general anæsthetic. The duration, as also the degree, of the loss of sensation depends upon the length of the exposure to the blast. So far I have never observed any untoward after-effects which could be attributed to the exhibition of the nitrous oxide. It appears to be entirely innocuous, after the temporary effect passes off.

Considering the comfort to the patient, the ease and satisfaction to the dentist when operating upon the most sensitive tissue, and the rapidity of work thus rendered possible, as promised by the method described, it would seem to hold forth the hope of painless dentistry to thousands of sufferers who never visit the dental office, through fear of the torture they expect to undergo.

The advantages which I claim for this method, of producing local anæsthesia by nitrous oxide under high pressure, may be briefly summarized as follows:

The action is complete and certain. The tissues are to a greater or less extent deprived of moisture and perfectly obtunded.

Unless the application is pushed beyond all reason (which might result in the freezing of the parts) no injurious effect is produced upon the tissue, as when ether, alcohol, chloroform, carbolic acid, etc., are employed.

The application is not followed by inflammation. The patient is not rendered unconscious by it, and there is no unpleasant odor or soiling of the tissues, so objectionable in the use of the other agents referred to.

The parts being perfectly dry facilitates the most careful examination.

The agent (compressed or liquefied nitrous oxide) is always available in the cylinders supplied to dentists.

Neither the nitrous oxide nor its action is affected by the temperature of the surrounding atmosphere, nor is it combustible or explosive.

Just how far the advantages of the method can be applied in the major operations of surgery, as the removal of tumors, amputations, etc., is not yet determined. It is among the possibilities that the blast may be continuously applied in advance of the knife, so as to render the parts insensible, and at the same time reduce the loss of blood to the minimum. Certainly the lancing of boils or carbuncles may be accomplished by its aid easily and painlessly.

Whether the action of nitrous oxide, as herein set forth, is chemical or mechanical I am as yet unable to state, but by experiments, now in progress, I hope to arrive at a clear solution of the question. Thus far I am led to the belief that anæsthesia is the result of dehydration.

If the experience of others bears out the writer's testimony, it would seem reasonable to expect the general adoption of the method in dentistry and minor surgery. When so harmless an obtundent can so readily be applied, it would be unwarranted cruelty to inflict pain.

There are other fields in which this application of nitrous oxide to tissues promises untold usefulness. Thus, in microscopic technique, the preparation of tissues for making sections for examination formerly required months, whereas now it is accomplished in a few weeks by using alcohol for the extraction of the moisture, the length of time varying with the density of the tissue to be acted upon. But even this, as will be easily understood, is frequently unsatisfactory, as often an immediate examination of a suspected tissue is desirable so that its character may be determined promptly. Ether spray from a hand-atomizer has been used to some extent for quick work, but it is far from answering the requirements, and its use has been practically abandoned in some laboratories. It may be found that the nitrous oxide blast will be useful in this direction.

Reports of Society Meetings.

SEVENTH ANNUAL SESSION OF THE MARYLAND STATE DENTAL ASSOCIATION.

(Continued from page 296.)

DISCUSSION OF DR. GIBSON'S PAPER ON "OBTURATORS FOR ACQUIRED AND CONGENITAL LESIONS OF THE HARD AND SOFT PALATE."

John N. Mackenzie, M.D., of Baltimore.—Mr. President, I came here to listen and to learn, not to speak,—a fact which will explain the reluctance with which I rise to respond to the kind invitation of the chair. I have been much interested in the able paper of Dr. Gibson. Permit me here, in advance, to say that my friend, Dr. Keech, is apparently laboring under a misapprehension in regard to the purport of the paper read by me, the other evening, at the meeting of the Hopkins Hospital Society. The subject of that paper was double uvula as contradistinguished from cleft of the soft palate or cleft of the hard and soft palate. The paper purported or was intended to treat of certain forms of this deformity which I had met with in my practice, and which are not noticed in the books. I attempted to refer the anomaly to the absence of the uvula in the lower types of creation, and in that way to connect it with a sort of reversion to the structure of otarian forms. In other words, the subject-matter of my paper was not the surgical treatment of cleft palate.

I was sensibly impressed, this evening, by the remark made by Dr. Gibson, in the initiatory portion of his essay,—viz., that if the appliances to which he referred did nothing else they would create a normal respiration. We all appreciate the value of healthy nasal breathing; and when nasal breathing becomes transformed into mouth breathing, it is a menace to perfect physiological life. The integrity of many structures is thus impaired,—not only the lower respiratory tract, but the middle ear and nasal pharynx, which may be regarded as accessory chambers to the nose. The middle

ear may be regarded in that light, because, in many cases, you will find the middle ear diseased to be symptomatic of the nasal trouble, and that it will disappear upon the dissipation of its primary cause. It seems to me that these appliances will be held in those difficult cases in which surgical interference is not justifiable.

I have been much gratified in listening to Dr. Gibson, to learn of the advances that have been made by him in that direction. He may be said to have only furnished other evidence in corroboration of the claim that is made in behalf of American dentistry,—one that is well known to the medical as well as to the dental profession,—that it is in the forefront of progress, and that its fame has reached to the uttermost limits of civilization. That fact is one that is universally recognized, and it is one of which Americans, when abroad, are justly proud.

Returning to the subject of the essay: One inquiry that I would like to propound to Dr. Gibson is this, Why should the obturator be made so large and ponderous? The name would seem to indicate that the contrary is true; but we know it to be a fact that the uvula and the soft palate are lifted up mainly through the primal agency of the tensor palati muscle. It was proven, long ago, by Czermak that, in the production of all oral sounds, whether vowels or consonants, the soft palate is brought up against the posterior wall,—not as a hinge, as in the case related by Dr. Gibson (and therefore failing in the accomplishment of the object), but as a curve. For example, there are certain valves in the heart and in the veins, and the soft palate forms a valve similar to one of those. Moreover, the isolation of the nasal cavities from the mouth in speech is not accomplished by the soft palate alone. It is generally supposed by medical men that the constrictor muscles of the pharynx are all concerned in deglutition. This is a great mistake. The inferior middle and the middle constrictor muscles are the ones concerned in swallowing, while the superior constrictor muscle is one that is conspicuously concerned in the production of speech. During the production of all oral sounds a slight bulging of certain fibres of the superior constrictor takes place; and upon that the soft palate rests. That was demonstrated by Passavant, in a case in which the palate was so high that the fact was capable of ocular demonstration.

Czermak proved the fact of the elevation of the soft palate by introducing wires of various kinds through the nose and having the patient articulate various sounds. It was found that during the articulation, especially of the vowel "I" (the German "T"),

the soft palate reached its maximum elevation. That was tested by men like Brücke, Shuh, and a number of others. Shuh had a case in which the whole front—the entire aspect—of the face was removed and the floor of the nostrils laid bare, so that he could watch the elevation of the palate during the articulation of the vowels. Czermak, Brücke, and other distinguished physiologists, corroborated these experiments, and the fact established by them is undoubted.

I would like to know whether observations of that kind upon these artificial palates have been made, and whether, in the production of all purely oral sounds, the cavity of the mouth is isolated from that of the nose. It may happen in this way that, if such isolation is not complete, the dorsum of the tongue may act as a sort of vicarious representative of this muscular action and be shoved farther up. In the production of the nasal vowels you are conscious of two motions,—an upward and backward motion of the tongue and a downward and forward motion of the soft palate. This, of course, cannot be demonstrated by looking in the mouth, but a consciousness of the fact exists. It may be that, in these artificial palates, the dorsum of the tongue may act vicariously in the place of the soft palate. It is also possible that more fibres of the constrictor may be concerned, and that nature may so adjust the superior constrictor that it may also vicariously act in the place of the soft palate.

I regard the question as an exceedingly interesting one, and I am apprehensive that the medical profession, as a rule, fails to recognize the importance of these cases, and is rather disposed to allow the patients to go home as incurable, and to assume that nothing can be done for them without an operation is performed. I think that Dr. Gibson has not only done this society great good, but has rendered the whole medical profession a valuable service by bringing before them the triumphant results of his marvellous ingenuity.

Dr. Gibson.—In response to the question, I beg to say that I have failed to find in anything written on this subject any great importance attached as to what the tongue can be made to do in these cases, and, in my opinion, it does play a *very important part*. There is in these cases a separation of the uvula, and as a rule each part is unusually large. The appliance is so adapted as not to interfere with the operations of the muscles of the palate. The two portions of the uvula back up (if I may so express it) against the pharynx, thus closing up all space left by the obturator and con-

strictor muscles. The velum and uvula also move anteriorly to the obturator.

If the soft-rubber velum were permanent and not so intricate and expensive in its construction, it would without doubt be the best appliance that could be used, as all the muscles of the soft palate are brought into use and the velum is elevated with them. These objections, however, preclude its general use, as the majority who need the appliance are not people of wealth.

These considerations impelled me to turn my attention to hard rubber; and I can say, from what I know in regard to it, that if the length and the proper curve are obtained, with the aid of the tongue and the constrictor muscles and with the moving back and forth of the soft palate, we can accomplish all that it is in our power to do at the present time. I indulge the hope that, in the near future, some one may succeed in finding a substance which will be sufficiently elastic and permanent to admit of it being utilized for the purpose required. I trust that my anticipation in this respect may be realized.

Dr. D. Genese.—The present is the third occasion in the United States, during a period of twelve years, upon which I have had the pleasure of seeing so many beautiful pieces of workmanship as are here shown; and I have rarely heard so complete a report in regard to them and such full explanations of practical demonstrations as we have received to-night from Dr. Gibson. Undoubtedly that which is here treated of is one of the chief branches of dental science, and one which is destined to raise the standard of our profession above the level of the mere tradesman. The models exhibited here are for the most part similar in character. The apparatus shows the fissures in the soft palate partly and in the hard palate partly but shows them all posteriorly.

In my own practice I have had a case in which the fissure was in the anterior portion of the mouth. The history of the case is as follows: It originated from a gun-shot wound in the late war. The wound healed and left a small brown spot, which irritated the patient. This the patient had the misfortune to open with a watch-key, and, in so doing, poisoned the wound. Lupus set in, and the result, after a period of thirteen years, was the loss of the entire anterior portion of the face. The case was seen by a number of practitioners in this city, but they objected to handling it because of the difficulty, or what seemed to be the impossibility, in their opinion, of securing a model of the parts because of the large fissure.

Let me here say that on this point I beg to differ from our *confrère*, Dr. Gibson, in the position he has taken, as I contend that a model can be taken of any soft tissue of the human frame, without displacing it and without subjecting the muscles to any tension. The model, however, should be taken in sections,—one, two, or three, or as many as are required,—ample time being allowed, so that the work may remain in the mouth in a plastic state until the muscles have recovered their normal position. You all know that the reflex action of the nerve-centre will cause the muscles to contract; and if you insert a foreign body against the soft tissue, particularly if it is a metal substance, you are going to have contraction there, which, if continued in a permanent piece of work, will end in absorption.

A model of any piece of tissue can be taken with the material used for renovating old composition. This material is very nearly as soft as beeswax, and will become very plastic or almost as plastic as new putty when heated to 180° of temperature.

Should your palate present any undercuts, provide yourself with little pieces of card-board, cut in any form that may be desired. Procure the modelling composition, or, if you prefer it, use plain beeswax. Insert it in one side of the fissure and hold it there for a few minutes with the finger or the instrument. Place a piece of card-board upon the side of it and press it in place. That will remain in position for a while. Then get your patient to close his or her mouth and so keep it in place with the tongue. In the mean time you are preparing another piece with another section of the card-board. The outer surface of the card-board that you have already caused to adhere to the composition you will then oil or soapstone, whichever you prefer. You will then prepare the third section and fill in. But you should take care that you can draw the card-board so as to leave a division by which you can move your last section and draw that out separately.

When you have thus placed your soft palate in, you will let the patient take some hot water in his or her mouth and keep moving it around in the mouth, thus bringing the muscles into play and forcing the substance of this material into something like the position of the muscles when in repose. The lower surface can be so made that the plaster impression that you take will readily be preserved and withdrawn. When the impression is removed and these sections are taken away, any pieces can be replaced and put into this hollow of the plaster impression. In that way you can get a model of almost any case that comes under your notice.

The case to which I was referring was one that ended in lupus, as I have said. I made a model in that case in the manner I have described. I wish to say here that no one who has not experienced it can fully appreciate the sense of comfort which a patient derives when work such as that which Dr. Gibson has shown us this evening is placed in the mouth. I suppose we all have some endearing expression which is peculiar to us, and that is generally the kind of an expression which finds utterance by a patient when he realizes the improvement which is made by this means. In the case of the patient of whom I have spoken, who was a poor man, his first exclamation as he looked up, after the piece was placed in his mouth, was, "Doctor, isn't this hunkidory?" That was the first intelligent expression that he had been heard to utter for a long time. Without the apparatus, he could not articulate at all. I mention this as substantiating what Dr. Gibson has said in regard to having the tongue educated to assist in the work. This patient, if any one came upon him suddenly, would try to hide his deformity by taking a silk handkerchief, throwing it up, catching it with his tongue, and holding it there as though his tongue were a peg. Such is the power that may be acquired over the movements of the tongue by practice. In that case, it was fortunate for me that the wisdom teeth remained and that I was able to attach the plate to them. The front part of the face, the nose, and the lip were all gone. I replaced these parts with white rubber and put on a piece of rabbit-skin to do service in the place of a moustache. The poor fellow then became able to go out in the street, though he had not been out for some years. He resided in this city. Before that apparatus was placed in his mouth he had not been out of his house for five years. The insertion of it enabled him to appear on the public street without being made an object of ridicule. His death, which occurred last year, was not due to any fault or defect of the apparatus, but was simply a natural consequence of the terrible disease of lupus, which had encroached upon a vital part, and from the ravages of which he gradually sank. For five years the apparatus had done service.

There was a second apparatus made use of in that case, but I was unable to obtain possession of it, as it was buried with the patient, having been retained in its position so as to better preserve the appearance of the corpse, for the benefit of his friends who desired to take a last view of the deceased.

I wish to say further that, in vulcanizing hard rubbers such as Dr. Gibson has shown you to-night, the rubber becomes very dense

and may be worn for a number of years without absorption or the fluids of the mouth having the slightest effect on it. There may be absorption of the soft tissue by continual friction of the edges on account of these not being modelled to the form of the muscles.

In regard to the metallic clasps, I would object to any metal being attached to the natural teeth, inasmuch as the abrasion would end in making the teeth very sensitive and spoiling the margins. I would rather make the separation and have a continuous rubber ring. Thereby you will have no friction as compared with what you would have by a hardened substance coming in contact with the tooth structure. The moulding made of this material is now, I think, simplified for us, inasmuch as Dr. Teague, of South Carolina, has given us an impression material out of which you can drive the moisture and by means of which you can cast your die immediately after the impression is taken from the mouth. I think with that and with the insight that Dr. Gibson has given us into the use of these various appliances, we can, in many of the cases brought before us, help our patients to a thorough, useful, and scientific adaptation of the dental obturator.

Dr. R. B. Winder.—I have been pleased and gratified by the essay with which we have been favored by Dr. Gibson. I do not think that any adverse criticism or comment can properly be made upon that essay. My confidence is such in the experience that Dr. Gibson has had in this direction that I would not, if I could, criticise the successful work which has crowned his efforts after so many years of application on his part. I have had isolated cases of the class referred to, but, as Dr. Gibson has pursued this specialty for many years, I am disposed to accept what he says as facts that are not easily controverted. I would like to ask the *modus operandi* by which the impression of a soft palate is obtained, this question having special reference to the pencilling of the models.

Dr. Gibson.—The method employed is to add to the model already obtained successive layers of plaster of Paris applied with a camel's-hair brush, guided by looking into the mouth from time to time, until a complete cast is obtained, much in the same way as the artist models a head or hand.

Dr. W. A. Mills.—I would ask Dr. Gibson what method he adopts in order to prevent the plaster from setting too quickly?

Dr. Gibson.—I make use of the plaster only in small quantities. I place a certain quantity of plaster in a saucer and, as I proceed, I add water to the plaster. If that which I am using becomes stiff I discard it and use fresh plaster. The setting of the plaster can

be retarded by applying vinegar to it. Molasses or sugar, when used in the mixing of plaster of Paris, will eventually make the plaster much harder than it would be if they were not used.

Dr. A. J. Volck.—I have been entertained and instructed by the address of Dr. Gibson, and much pleased with the illustrations he has given. I may say that, in the early part of my practice, many years ago, I had a number of these cases on hand. In 1851 I had one such case in connection with Dr. Hollahan, of Wheeling, W. Va., whose name, I suppose, is familiar to all of the gentlemen present. An apparatus which we then made was regarded by us as a very great thing, but I am apprehensive that if it were exhibited to-day it would be looked upon as somewhat antiquated and perhaps as a relic of antediluvian times. Its method of construction was simply this: A pulp was formed close to the posterior naris. This was connected with the plate by spiral springs and slides. At the same time a nose was made, which were held upon the face by a big pair of spectacles, with a bar running through the nose and a spiral spring to hold the lower part of the nose back against the face. When the machine was all put together it looked quite well, but the patient felt very much as did one of the old knights in harness, perfectly safe but unable to move.

I was exceedingly glad to hear Dr. Gibson say what he did, because he has given me several new ideas. I am well satisfied, from my own experience, that Dr. Gibson is correct when he says that the taking of an impression of the soft palate is very difficult. I have tried it over and over again but always failed. In one of these cases, which was that of a small boy who is now only eighteen years of age, I attempted to cover a little over the hard palate, but as it irritated the palate I shaved it off until that irritation wore away. The boy is wearing that plate now, and his condition is very much improved. As he is young and still growing, it is almost impossible to make a plate that he can wear for any length of time. I expect to be obliged to make another plate for him in the course of a year.

There is one matter spoken of by Dr. Gibson about which I would like to say a word, especially as it is in point. I refer to his allusion to hare-lip. It recalls to my mind a case in which I operated upon a patient and in which the operation was very successful,—that is to say, scarcely any deformity in the face is apparent. But I have found, in that case, a couple of incisors growing inside. In operating on hare-lip, the maxilla being entirely divided, I took

those parts and pressed them together. They healed perfectly and the lip is perfect, although you can see the scar that remains. But now here come these teeth. They have grown out and seem to be either detached from each other, or not in the bone at all; that is, they move about without being loose in the gum. Of course there must be some deformity about the roots. The question in my mind now is as to whether I had better extract these teeth now, because I do not know what the result is to be, or whether I should wait until the other teeth make their appearance in his jaw and perform the operation then. I would be glad to have the opinion of Dr. Gibson as to the proper course to pursue.

Dr. Gibson.—If those teeth are going to interfere with the articulation, I would extract them.

Dr. Volck.—They do not at present.

Dr. Gibson.—Then I would let them alone for the present.

Dr. Volck.—The fact is this: they are not growing flat with the face, but are growing sideways.

Dr. Gibson.—Will they ever be of any service?

Dr. Volck.—No.

Dr. Gibson.—Then I would extract them.

Dr. Volck.—That is about what I had determined to do.

Dr. Palmer, of New York.—My experience with this subject in a practical way is somewhat limited, as it is one that rarely comes under my observation. Much that has been said here was full of information for me, and I can say that a doctor, like men of other professions, must go from home to hear the news. I can only reiterate what Dr. Winder has said, that, knowing comparatively little of the subject from personal observation, I am content to accept as facts the statements that have been made by one who has given the matter so much care and attention as have been given to it by the essayist. I think that those of us who know anything of the use of vulcanite can thoroughly understand why Dr. Gibson has been so successful in the process of inflating those attachments.

Dr. S. H. Guilford, of Philadelphia.—I did not hear the paper which was read, and therefore cannot make any remarks directly upon it. I have had very little experience, as very few cases in that line have come to me. I am rather glad of this, for I think it certainly must be very difficult to do work successfully in many of such cases. It has occurred to me to mention a case that was sent to me quite recently by a surgeon in Philadelphia. It was the case of a lady who had lost her nasal bones. I think they had been

removed entirely by an operation. The skin over the space had been drawn very tightly, and there was some adhesion in the centre where the skin had gone in. The face was but slightly disfigured. The falling in could be noticed, but the previous operation had been so nicely performed that the imperfection was not conspicuous. The surgeon communicated with me to ascertain whether I could not make an artificial piece from what he called "some unctious material," to supply the place of the nasal bones, and which he proposed to insert by an operation. I informed him that, in my judgment, this was entirely inadvisable because the pressure of the skin, which was then very tense, would be made greater after being drawn up to cover the artificial piece, and that that pressure would cause resorption of the bone upon which it rested and also of the soft tissues adjacent.

I confess that I was at the time somewhat surprised by the intimation conveyed by the question that surgeons apparently know so little about matters connected with dentistry. I would have supposed, in that case, that the surgeon was better informed in regard to the resorption of bone and understood that the tense skin would not bear any additional tension. But this is not germane to the essay nor to the subject.

Dr. George Evans, of New York.—I have had very little experience in the specialty treated of by Dr. Gibson, and the statement made by Dr. Guilford is about what I would have said if the call upon me had been made earlier. I have felt that I had not that experience which is essential to enable me to take hold of such cases and treat them effectively. The few that have come to me I have been generous enough generally to pass over to some member of the profession with more experience than myself, and whom I considered more competent than myself to take hold of them.

Dr. A. J. Volck.—One question that occurs to me I would like to address to the meeting generally, although it is one that has no immediate connection with cases like those which have been spoken of, but I mention it here, as this subject may not be again presented until our next meeting, and the inquiry is upon a matter about which it is of interest to us to know something.

We are occasionally called on to furnish artificial noses, and this occurs especially in cases where the deformity is the result of disease. My question is, What is the best material of which to make those artificial noses? I have seen them made of vulcanized rubber, I have seen them made of gutta-percha, I have seen them made of wax, I have seen them made of silver and of gold. If any

gentleman present has had any experience in the matter, I would like him to give us the benefit of it.

Dr. K. C. Gibson.—I have had some little experience in making artificial noses and also in making artificial ears; and I am perhaps equally as desirous as the gentleman who asked the question to have information as to what substance should be preferred for that purpose. We have, so far, obtained better results in the use of celluloid than have been obtained in the use of any other substance of which I have any knowledge. Some years ago a celluloid nose was made for a gentleman, in a metal die, which was retained. A few months later that gentleman telegraphed for a duplicate nose, and some time later we received a letter from him stating that, while smoking a cigar, his nose caught fire and was burned. Perhaps he studied economy and retained the cigar in his mouth until it became so short that it came in contact with his nose. The liability to an accident of this kind is a serious objection to the use of celluloid. It might be advisable to use it in cases where the object is to create a prejudice against the smoking habit. The use of tobacco in syphilitic cases, as is well known to the medical profession, is very detrimental to the efforts of the physician, and, consequently, the use of celluloid might be advocated as a means of compelling the patient to discontinue the use of tobacco.

You can take different colors of the celluloid, and by pressing it together and remoulding it, you can finally get a color which will closely resemble flesh color. But if a patient goes out on a cold day, his face may redden while his nose retains the original color, and under other circumstances the reverse may be the case. It may be safe to assume that the use of liquor would not be likely to affect the appearance of a nose of that kind.

Seriously speaking, gentlemen, the question is one that should be solved. There is a class of unfortunate individuals who need our services and who are turned over to us by the medical profession. I wish we had some substance that would take the place of celluloid.

In connection with that matter, gentlemen, I wish to say that one of the models which I have exhibited, and which has been handed around to you, is the one in which the patient had used cotton for the plug. In this case the man had also lost his nose. He was much pleased with the result, in having his articulation restored; and, although sixty-odd years of age, he was very anxious to improve his appearance. Four or five months after the introduction of the obturator, he desired to have a nose made. This

was made for him by taking a flap from the forehead. It was what is called a plastic operation. It resulted, however, in the death of the poor fellow from pyæmia.

Let me say here that in those cases which result from syphilis, great care is to be exercised by the dentist in adjusting the nasal substitute. Where the deformity is due to an accident, a gunshot wound or a similar cause, the tissue will tolerate a fixture of that kind; but where the deformity is due to disease, and you are obliged to sustain the appliance on springs resting on the lower part of the nasal cavity, if you are not very careful with it, there will be, after the lapse of a few months, absorption and an aggravation of the disease, and you will wish you had never made a nose for the poor patient.

Dr. D. Genese.—I wish to say that there is one substance which has not been mentioned by either gentleman, and that is, a platinum base with porcelain, which with a little care and a few extra firings may be built up to form a nose. This can be matched to nearly a flesh color, and the glaze may be taken off by the application of hydrofluoric acid or it may be ground off. It is better to take it off with the acid, as this gives a certain appearance of dulness, and it may be polished with Arkansas stone. In burning, you can make it of whatever shape you prefer, and may keep it in its shape by the use of flaps of soft platinum, and it may be formed in any way you want it by making the edges of it of round wire, solid, of fine gold. It is necessary that, in work of that kind, especial care should be taken to avoid accidents from dropping it, although accidents are of course liable to occur under any circumstances. About two years ago I put on one which was of rubber. I used chloroform and gum rosin with the water colors with which I colored it, after mixing these together. In this way I got a beautiful imitation of the flesh color. But the nose needed recoloring every month. I think Dr. Winder saw that nose. It is still being worn by the patient for whom it was made. I anticipate having my attention again called to it at an early day.

Dr. R. Grady.—A gentleman present is desirous of learning from Dr. Genese how the water colors stand the rain.

Dr. Genese.—Instead of mixing with water, as I have explained, I mixed the colors with chloroform and powdered gum. This formed an impervious coating.

Dr. A. J. Volck.—And it was one that would not wash off.

I wish to say that my motive in asking the question, which I propounded some moments ago, was to acquire information on the

subject from the members generally. In reference to what has been said, I may say that I do not believe in the usefulness of platinum noses, because of their weight. They are extremely heavy. If we are to use metal at all, we may use gold and carefully finish up the work. If in the patient's family there is a nose which the artificial one can be made to resemble, or if there is a distinctive family nose in a particular case, we imitate that nose. I do not think that, in cases generally, clamps inside of the nose can be made use of. This is especially true in those cases in which the loss of the nose has been caused by disease, and I have found that this is quite generally the cause. My plan has been to model the nose on the face and then form it in gold, after which I paint it with Japan colors, which are afterwards baked into the model and which retain their color for a long time very well. I do not use water colors for this purpose. I make the color of the nose a little stronger than that of the face, as otherwise the nasal appendage is apt to look too pale. If a patient afterwards returns you a nose that has been painted according to some definite plan in this way, you are able to determine from memory how that nose should look. If the patient has a pair of these noses, so that he is able to change them about, he can always have a clean nose and one that is in good order by having it repainted and repaired.

I have also prepared a nose of common, clean vulcanized rubber for use by a lady patient. It was painted up with common oil paints. The lady paints it herself, and is quite an artist. She has become so expert in painting her own nose that it is no more difficult for her to do it than it is for her to wash her face. She touches it up in the morning. It dries very quickly, and she always has a good nose.

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting Tuesday evening, March 18, 1890, in the New York Academy of Medicine, No. 12 West Thirty-first Street.

The President, Dr. J. Morgan Howe, in the chair. The Corresponding Secretary read the following communications:

"CHAS. F. IVES, M.D.S., *Corresponding Secretary, etc.* :

"MY DEAR SIR,—Your favor of the 20th, enclosing a copy of a preamble and resolution passed by the New York Odontological Society, at a regular meeting of said society, held on the 18th inst., is at hand.

"In answer, we wish to state that the author of said preamble and resolution has, either through ignorance of histological nomenclature or the English language, made a sad mistake, as neither of us, in any of our writings, has 'claimed the demonstration of the presence of a protoplasmic reticulum in both enamel and dentine,' or in either one of them.

"We would like further to state, that what is meant by 'three experts' in this branch of histology we are unable to understand, as we have no knowledge of any such.

"Very truly yours,

"C. HEITZMANN,
"C. F. W. BÖDECKER,
"FRANK ABBOTT."

"60 EAST FIFTY-EIGHTH STREET,
March 1, 1890.

"DR. C. F. IVES:

"DEAR DOCTOR,—Yours of February 28 at hand. In regard to Dr. Allan's resolution, I will submit to everything Dr. C. Heitzmann may agree to. Although I do not see that this matter can lead to anything else but a great deal of unpleasantness and harm for the Odontological Society.

"I am of the opinion that the matter is a purely personal one between Drs. Heitzmann and Allan, and should be settled by them.

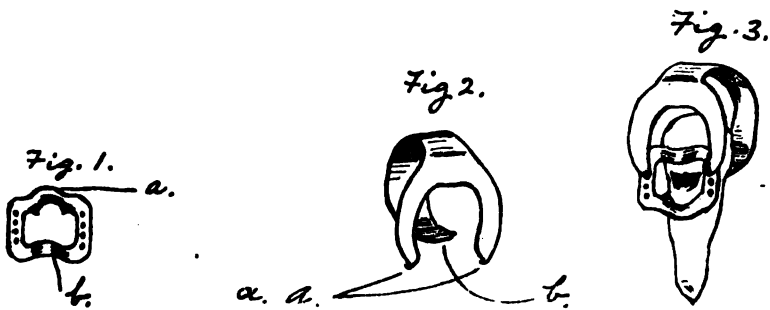
"Yours truly,

"C. F. W. BÖDECKER."

On motion of Dr. Jarvie, the communications read were received and placed on file.

The President.—The next order of business will be Incidents of Practice and Casual Communications. Under this head, I will present and describe a device for retaining the dam in place while operating on cervical cavities. It consists of a face piece, so shaped as to hold the dam above the cavity, and to be itself held in position against the labial or buccal surface of the tooth by a clamp or other means. I have used this device for about two years, postponing the public presentation of it because I realized that it was imperfect. I have recently made an improvement in the form of the face piece, and present it now, in the hope that some one will develop the idea more perfectly. The way in which I have worked this idea out thus far is to make the dam-retainer or face piece of thin steel. (I have used French, cold-rolled steel, twenty-nine or thirty gauge.) It will pass around two teeth with the dam-retainers held in place upon them by clamps. The shape and size of a face piece or dam-retainer, suitable in most cases for use on the ten anterior teeth, is shown in Fig. 1. A series of small holes are drilled at either side. At one edge of the central aperture a concavity is filed to fit the neck of the tooth, and this edge is turned over to nearly a right angle

with the plane of the other parts (as at *a*). On the opposite side of the aperture (*b*) the surface is made slightly concave (on the flat) where it rests on the coronal surface of the tooth. The form can be variously modified to suit special cases, but this is the shape found most useful for general application. The most convenient device for holding this retainer on the tooth which I have yet contrived is this clamp, having two points to engage in either pair of holes in the retainer, and one square end at the other extremity to bear on the neck of the tooth on the lingual surface. Fig. 2 shows this clamp. The opposing bearings (at *a a* and at *b*) exert pressure at exactly opposite points on the tooth, so there is no tendency to slip, while the retainer is held in its position, either high or low, equally well. The dam-retainer, held on a bicuspid by this clamp, is shown in Fig. 3. In some difficult cases, a very small piece of modelling compound may be placed on the part of the face piece



which is to rest on the crown of the tooth (Fig. 1, *b*), and while the compound is soft, place the retainer on the tooth in the position in which it is desired to be held, holding it in place with the finger while the clamp is applied. When a tooth is somewhat separated from its neighbors, the face piece can be tied fast with silk or thread. The dam is to be applied after the retainer is adjusted, and I have found thin rubber to answer best. So far as I know, the idea is free and unpatented, and I describe, show, and illustrate it in order that it may be free not only to use as it is now, but free to improve on without let or hinderance.

We will be very happy to hear from any one present who has anything else to offer under the head of Incidents of Practice or Casual Communications.

Dr. Edward S. Niles.—I have recently been interested in an apparatus for destroying or obtunding the sensitiveness of dentine; and just as I was about leaving home the man who patented this

apparatus was in my office, and I said, If you will loan me one of your appliances to take to New York I will give it to some of my professional friends there to test. He consented, so I brought it with me. I left it with Dr. Bogue, who suggested that it might be of interest to this meeting. I will give you first the history of the apparatus. It is an invention of a man in Providence, R. I. First used for this purpose about a year ago, it is an outgrowth of an apparatus used in the practice of medicine to keep certain parts of the body at a given temperature, either by moist or dry heat. That is an entirely different appliance from this, and especially designed for use in the practice of medicine. The principle of this apparatus is simply the application of steam to sensitive dentine, and is very simple. By means of an alcohol lamp under this small boiler, steam is generated and forced through this small tube, drawn to a point about equal in diameter to that of a hypodermic syringe. This fine jet of steam is applied to the cavity for about five to fifteen seconds. By longer application it has been used for destroying pulps and removing pulps of teeth. My personal experience with it has been slight. There are members of the profession in Providence and Boston who have used it for several months with very good results. I am, however, so well pleased with it that I have rented an instrument. It accomplishes the end with very little pain if one has the experience to use it properly. I simply present it, gentlemen, as I think it is one of the coming things that we may need for obtunding sensitive dentine. It opens up a large field for experiment, as we can use warm applications of various solutions, alcohol, cocaine, or a large variety of things, which, in cold solution, would have little or no effect, may be made valuable as obtundents if vaporized and applied hot or warm.

Dr. Lord.—What is generally used?

Dr. Niles.—Water is generally used in the boiler.

Dr. S. G. Perry.—I am amply repaid for coming here to-night by one sight of this little clamp, which, I understand, is a device of the President. I have never seen anything of that kind before that I took very much interest in. It is a little risky for me to praise anything that I have not tried, but this seems to be a very ingenious little device, and so mechanically correct that it must succeed. I have never seen one that could be easily adjusted and that would stay in place; but made on this principle it is bound to stay every time.

The President.—Some teeth are so irregular that it will not keep its place well.

Dr. William Jarvie.—Obtunding the sensitiveness of dentine can, I think, be accomplished in a very much simpler manner than with the device presented to-night. Let me relate a case in which I employed it to-day. The cavity was situated on the labial aspect of the second inferior bicuspid, and was so sensitive that the touch of an instrument would make the patient shrink and suffer a great deal of pain. I applied the rubber dam, and with the hot-air syringe dried the cavity perfectly, then with a sharp instrument I excavated the cavity with almost no pain. I think the perfect dryness of the cavity and a sharp excavator are the best and safest obtunders we can have.

Dr. Duinelle.—The instrument that has been presented to-night reminds me of a similar one introduced to the profession years ago. It had a pendulous lamp underneath, like this, for heating the air to the right degree. It was rather a bungling affair, and very much like many other complex instruments which are made to accomplish a simple purpose. It reminds me of an anecdote of one of the Khedives of Egypt, who had a pair of gold snuffers presented to him. He hardly comprehended how to use them, but in a measure the idea finally dawned upon him, and taking the snuffers, he opened them, snuffed the candle with his thumb and fingers, then put the results into the snuffers, threw up his hands, and said, "Great is Alla, and Mahomet is his prophet!" A great many intricate and useless things accumulate in our laboratories. The hot-air pendulous lamp referred to I have in my museum still, which is filled with all sorts of devices for doing things that we can often do at our fingers' ends in a moment. With these devices there is often but little relation between cause and effect, it is like shooting a mosquito with a ten-pound cannon! In reference to obtunding hypersensitive dentine I have very little difficulty in the matter. Hot air is quite sufficient in most instances, but in ninety-nine cases out of one hundred I use simple chloride of zinc. I recommended it to the profession a number of years ago. Sometimes it produces a little pain for a few minutes, but usually nothing to speak of. I apply it with perfect audacity and impunity under all circumstances. I never devitalized a pulp with it in my life. Sometimes I have used it in a somewhat heroic sort of way. I have dried my cavity and filled it full of the salt of chloride of zinc, and then, in order to enforce and project it into the sensitive dentine, I have applied a heated instrument to it; and without any subsequent trouble I think the sensitiveness of dentine can be very easily overcome with this agent.

Dr. Cook.—How does the patient feel about it?

Dr. Dwinelle.—That is a very important question to ask. Perhaps in the majority of cases there is some pain, but oftentimes little or none; as the patients say, "none to speak of." The philosophy of it is simply this: We actually destroy for the time being the sensitive fibrillæ projecting from the nerve itself, the fibrillæ in the dentinal tubuli. We have a great many cases of hypersensitive dentine which are very serious, especially at the cervical points of the teeth. I have had people come to me who could not breathe sidewise into the mouth upon the teeth without pain. One of my patients told me that in drawing in her breath the shock was so great that she positively dropped to the floor and was supposed to be in a fit. There was no erosion apparent in this case. In applying the chloride of zinc to these sensitive places by the gum, I first put on the rubber dam, adjust it to its place so as to draw the gum up to the periosteum, then apply the pure salt, and enforce it with a heated instrument. Sometimes, in a couple of weeks the patient has come back for a renewal, but very rarely after the second application. I have great confidence in the efficacy and safety of chloride of zinc. I am perhaps like the shoemaker who thought there was nothing like leather!

The President.—Gentlemen, I have the pleasure of announcing that Dr. G. L. Curtis, of Syracuse, is with us to-night, and will read a paper, the title of which is "Local Anæsthesia by Nitrous Oxide."

(For paper, see page 403.)

The President.—Gentlemen, the subject of Dr. Curtis's very interesting paper is before you. I hope the gentlemen who are interested in this subject of sensitive dentine and its anæsthesia will take part in the discussion as promptly as possible.

Dr. Curtis.—A patient has been provided, I believe, whereby the use of this agent can be demonstrated before you this evening; and after the discussion, I will demonstrate the value of nitrous oxide as an obtundent of sensitive dentine.

Dr. Bogue.—Do I understand Dr. Curtis to announce as his belief that dehydration, or getting rid of the water in the dentinal tissue, is the most effective method of getting rid of the sensitiveness?

Dr. Curtis.—I believe it is the most complete method.

Dr. Bogue.—Further, I would ask whether his experiments show any special difference in the results obtained by whatever process the tissues are dried or the water got rid off; because we have a number of agents that have a very strong affinity for water, and we have hot air as well as nitrous oxide.

Dr. Curtis.—I do not think it would make any difference in what way the water is disposed of, as to the sensitiveness; but it does matter what agents are used as to the effect upon the tissues. I mean that some of the agents employed have a very injurious effect upon the tissues, and their use is not warranted.

Dr. Bogue.—Would you kindly mention them.

Dr. Curtis.—Carbolic acid, chloride of zinc, hot air, alcohol, sulphuric acid, etc.

Dr. Bogue.—How about glycerin?

Dr. Curtis.—I have never used it. It will dehydrate.

Dr. Bogue.—How about absolute alcohol?

Dr. Curtis.—It will also dehydrate. I believe alcohol will produce subsequent inflammation. Its use is followed by pain.

Dr. Perry.—I have a cylinder in my cellar in which I condense air. We keep it on tap, at from twenty-five to fifty pounds pressure. I would like to ask Dr. Curtis whether we might not expect to get the same result from that condensed air that he gets with nitrous oxide?

Dr. Curtis.—I do not think a pressure of fifty pounds sufficient to produce the desired effect. High pressure is essential. The rapid expansion of nitrous oxide produces increased coldness over that of air. Where the dehydration occurs, the moisture is taken up and carried off.

Dr. Perry.—Would you get the same effect by using air alone under the same pressure? You claim that there is nothing especial in the gas itself.

Dr. Curtis.—I think not, as air is not as expansive, consequently could not be as cold.

Dr. Dwinelle.—You do not claim that the nitrous oxide has any sedative effect?

Dr. Curtis.—No, sir.

Dr. Dwinelle.—You get the coldness from the great degree of evaporation produced.

Dr. Curtis.—Rapid evaporation.

Dr. Bogue.—I am glad that Dr. Curtis's experience is what it is, for, in continuing some experiments begun some six or eight years ago with veratria dissolved in absolute alcohol, to which an equal volume of glycerin was added, I happened to stumble across the idea of adding an equal volume of cocaine, carbolic acid, and tannin, and I found almost the same results that Dr. Curtis speaks of. I mention it in case some of my professional brethren could not easily get a cylinder of nitrous oxide. This you can get.

Dr. Perry.—Is that successful?

Dr. Bogue.—It is in the majority of cases.

Dr. Perry.—What is the formula?

Dr. Bogue.—Veratria, such quantity as you please, dissolved in absolute alcohol, to which add an equal volume of glycerin and carbolic acid. A few months since, I took cocaine, *quantum sufficit*, dissolved it in absolute alcohol, and added tannin to saturation; to this I added carbolic acid and glycerin, an equal volume of each; the same idea being present that Dr. Curtis has advocated. Of these two mixtures I take equal quantities, mix them together, and put them into the cavity. If I put it into a large cavity and go to work at a small one, by the time I have finished the small one the other is pretty near devoid of its sensitiveness.

Dr. Perry.—What element of danger is there in the remedy?

Dr. Bogue.—Veratria.

Dr. Perry.—Is it to be very carefully guarded against?

Dr. Bogue.—Of course, one-fifty-second of a grain is a dose.

Dr. Ottolengui.—I have paid a great deal of attention to the obtunding of sensitive dentine, and I want to say something about this theory of dehydration, because that is the theory on which I have worked. In the very beginning of the evening, before the paper was read, one gentleman announced that the obtunding of sensitive dentine was easy; that it is only necessary to dry out the cavity. That is it exactly. Dry it out. If it can be dried out with a hot-air syringe, that is all that is necessary. But it does not always follow that the simple application of heat from a rubber bulb will be sufficient to dehydrate the cavity. Consequently it may be advisable to do as Dr. Dwinelle did, use chloride of zinc crystals, because that absorbs more moisture. Chloride of zinc, in a fluid form, has attracted to itself moisture from the atmosphere, and therefore cannot take as much moisture from the tooth-tissues as the crystals. I got as far as that. I found a patient, who lives on Staten Island, who could not have a tooth filled, or even the old oxyphosphate taken out, the hot air not being sufficient to relieve the sensitiveness. Somebody, somewhere, whispered dehydration, and I at once saw that that is the result obtained whether we use hot air, chloride, or zinc. Then I conceived the scheme of intensifying the dehydration, and began to use an ether spray. I kept a record of cases for nearly two years, tabulating two hundred and fifty of them, and obtained success in every case, but attended by objectionable features in many cases, showing that dehydration was all right and the ether spray sometimes wrong.

I might say here, incidentally, that I thought at that time that I was originating an idea, but somebody told me I had not, for he had seen it in the *Cosmos*. I looked over the *Cosmos*, and found that about twenty-two or twenty-three years ago a very modest gentleman had suggested that it could be done in that way. I rarely use ether now except in extreme cases; but it does produce anæsthesia,—absolute anæsthesia; not as the hot-air blast does, nor as does the chloride,—*sometimes*,—but every time. When I remembered that Dr. Curtis told me, two or three years ago, that he had discovered the whole theory, I made up my mind that this was the place to come to-night. If what he says is true, nitrous oxide is our friend. Dr. Rhein uses chloride of methyl. I do not think there is any particular property in chloride of methyl except the extreme cold, but the cold is intense and the obtunding is very rapid. The question has been asked to-night whether it is the nitrous oxide gas only that is effective, or whether it is the high pressure. On the other hand, I could not help thinking, when the doctor described that case, that he had a little more than local anæsthesia; that relaxation of the muscles was caused by inhalation of the nitrous oxide. I have seen a gentleman produce anæsthesia in a tooth by simply waving a napkin saturated with chloroform over the mouth. In the earliest stages of anæsthesia, sensitiveness departs from the extremities.

I made, some two or three years ago, a long series of experiments with nitrous oxide gas, myself being the patient in order to note the stages of the anæsthesia. I made the experiments in this way: I would have an assistant prick me with a needle while the drug was administered, and I found invariably that I was conscious of the fact that sensation had ceased; proving that the first effect of anæsthesia is that sensation is controlled. It may be a little better to use nitrous oxide than hot air, because if any of the gas goes down the throat, so much the better; a little of it is very good; so if we are seeking for a powerful agent for dehydration, I have no doubt that a most convenient agent is nitrous oxide, as suggested by Dr. Curtis.

Dr. Niles.—As a matter of fact, a dehydrated nerve does not communicate sensation. This can be easily demonstrated by experiments on the frog. Those of us who have worked in the physiological laboratory know that frogs are used to demonstrate the reflex action of the spinal nerve. The medulla is severed, the nerve is dissected out of the frog's leg, and if the foot is irritated, the leg is quickly drawn up. If the nerve become dry, there is no move-

ment on the same irritation, but remoisten with salt water, and the function returns. The only difficulty is in getting a cavity dry quickly enough so that the patient shall not suffer pain during the operation. It is very singular that I should be here with this apparatus, which produces insensibility in a manner exactly opposite by moist heat. It leaves one to suppose that heat alone is capable of producing insensibility of tooth-structure.

Dr. Ottolengui.—May I suggest that it operates on the same plan? Both methods produce heat, which seems to be the effective agent. The tooth, which is being operated upon, is so hard that no moisture is likely to get into the tooth-substance, and the heat that goes with the moisture will dehydrate the portion below the surface, although the surface itself is wet.

A Voice.—Is it not cooked?

Dr. Niles.—No, it is not cooked, because sensation returns to that point, which could not happen if it were cooked.

Dr. Jarvie.—It seems to me that there is a question behind all this that we should take into consideration. Many means may be used that will obtund the sensitiveness of teeth, but is it well to employ them, in view of the after-results? I think that when Dr. Curtis read the description of his throwing a blast of nitrous oxide into a cavity he gave us the best illustration why it should not have been done. He told us that the sensitiveness was completely obtunded; that he exposed the pulp which bled, and that he went on with the operation, capped the pulp and filled the cavity. There is great danger of obtunding teeth to a too great extent. I think it is wise to let the pulp have its normal degree of sensibility left as a guide to tell us not to cut too near it. Painless work is all very nice while excavating, but that is of little real advantage if, as a result, the filling be made too near the pulp, and inflammation and suppuration ensue.

I do believe the plan suggested, of drying out the cavity with a hot-air syringe, will obtund the sensitiveness sufficiently to enable the patient to bear the cutting, if sharp excavators are used. It is better for the patient to bear a little pain than to run the risk of exposing the pulp by wholly destroying, temporarily, sensation in the tooth. My experience is that a blast of cold air, such as the essayist recommends in a sensitive cavity, causes more pain than will be compensated for by the subsequent dryness.

Dr. Mills.—I want to speak of some experiments that I have been making in regard to obtunding sensitive dentine. I do not propose to say very much about what I have been doing, except to

give you a statement of the facts. We all know that with all the suggestions and formulas that we have had in regard to the treatment of sensitive dentine, the howl goes on all over the country about the pain we cause. There is no profession that has so much ill-repute attached to it in regard to the matter of pain as ours. We are considered harsh and cruel by the people we try to serve, and it seems to me that, with all our remedies, there is still something to be done to correct this defect, or we are certainly in an unfortunate position. What I have been doing in this line I think you will admit is something new, when I tell you what it is. The result of my experiments has been very gratifying to both myself and my patients, and I have received many compliments in reference to it as compared with the treatment of others. I make use every day in my practice of different potential acids. I use sulphuric acid, nitric acid, and muriatic acid, for controlling sensitive dentine; and I am ready to demonstrate and prove their efficacy to any gentleman who may come to see me in my office at any time.

Dr. Dwinelle.—While I was on the floor, a moment ago, the query was made whether there was any considerable pain connected with the application of chloride of zinc. I admit that there is at times, but not as much or often as one would suppose. By applying the salt, pure and simple, and allowing it to deliquesce (by absorption), it is far less painful than when used in a liquid solution. In extreme cases I have qualified it with great success by drying the cavity and introducing cocaine for a short time and then applying the caustic. In such cases the patient never complains of pain. I sometimes use alcohol and other remedies, but chloride of zinc is my sheet-anchor, and I seldom have occasion for any other agent for obtunding sensitive dentine.

Perhaps I may have thrown a little ridicule upon the instrument that has been presented to-night, and I wish to say that I did not refer to that instrument especially. I do not say that the use of this apparatus is not effective, but only that simple measures will generally accomplish the end that is supposed to be accomplished by this somewhat complicated machine. I am greatly obliged to Dr. Niles for bringing this instrument to our attention, and I believe it will do good. I do not propose to ridicule anything that is the result of honest effort to advance our profession in the right direction.

With reference to the remark of Dr. Ottolengui, that he supposed he had invented or discovered a certain method of practice that was highly efficacious, and subsequently found that it had been used many years ago. I do not think that that militates against the

actual discovery by him. I believe in coincident discovery. It is perfectly well known that important discoveries have been made simultaneously throughout the world by different individuals at almost the same hour. New planets have been discovered by different astronomers in different parts of this globe on the same night. It seems to be a principle in nature that when the world is in the most need of a great discovery, when she is virtually in travail for it, so to speak, that out of the laboratory of heaven, or the great mind of the Creator, the idea is vouchsafed to us, is sent down to us, and is received in various lands and by different minds at about the same time. So I am inclined to think that the fact that a man's discovery has been used before him is no evidence that it was not an original discovery on his part. It is possible that in the annals of eternity it may be proven that every thought is but a reproduction of some thought that has been produced and reproduced over and over in the history of the world of intelligence. So the matter of plagiarism is not so very remarkable after all. It is with caution that we should undertake to say that this man or that man has been guilty of plagiarism. History constantly repeats itself, and ideas are constantly repeated, so it is well for us to use charity in this matter. Good old Solomon said, thousands of years ago, that there was nothing new under the sun!

Dr. Curtis's paper is an exceedingly interesting one. It is not so very important to me in my own practice, but it may be hereafter. It has opened a field of inquiry in a direction that will prove profitable, and I certainly thank Dr. Curtis for his presentation of this subject to us. It will elicit a great deal of earnest and honest inquiry, and I have no doubt will lead to the development of that which we are aiming after.

Dr. Brockway.—This matter of obtunding sensitive dentine is not such an important one to us now, it seems to me, as it was a few years ago. I am led to make this remark from the fact that in my own practice I have far less complaint from my patients in regard to painful operations than I used to have. I do not doubt the efficacy of the methods described and the agents that have been used; and I am struck more forcibly than ever with the fact that "there is nothing new under the sun," when I find that what I supposed I discovered some years ago, a method of obtunding sensitive dentine by dehydration, had been discovered by some one and published a few years before. And it has been discovered by Dr. Ottolengui now, and doubtless will be discovered by many others in the future. I wrote, and read before the Brooklyn Dental Society

some twelve or fifteen years ago, a paper on this subject of obtunding sensitive dentine by dehydration. I was led to the discovery in this way: From using the rubber dam to cover several teeth in which cavities were to be prepared, I found that the cavities last prepared were usually quite insensible to pain. Those cavities were in teeth that had been kept dry for some time by the application of the dam; and taking the hint from that, I improved upon it by using a jet of hot air from a syringe. I used this method quite extensively for some time, and occasionally use it now, but not as much as formerly,—for two reasons: one is that I was led to suspect that it might possibly be injurious to the tooth to keep it dry so long, or to dry it so thoroughly as I did. The other reason is that I have changed my method of preparing cavities largely. Instead of cutting them out dry, or in a half-dried condition, as formerly, I almost invariably nowadays have a jet of water thrown upon the bur while I am using it. I prepare cavities very largely with the engine, driven by a water motor, and using very sharp burs. No bur should be used unless it is *sharp*. With a jet of water thrown upon the bur, to keep it from heating and to wash away the chips, I can prepare cavities much more rapidly than formerly, and without causing excessive pain. I have the impression that much of the pain, where the bur is used, comes from the incautious use of it, from the heat produced by friction.

I do not know that I have anything more to say except to set myself right in the matter of the dehydration of cavities. I was not aware when I wrote the paper I speak of that the subject had been mentioned before.

Dr. Curtis here demonstrated successfully the use and advantage of his nitrous oxide blast by applying it to the teeth of a young man. The cavities were situated in the approximating surfaces of the central and lateral incisors. The teeth were exceedingly sensitive, and gave unendurable pain when an attempt to excavate the cavities was made before the gas was used. The rubber dam was adjusted and the blast gently applied for about two minutes, when the cavities were quickly and freely excavated without the slightest expression of pain or discomfort to the patient. Five minutes later the teeth were as sensitive as before the application of the nitrous oxide. The cavities were filled with gutta-percha.

Dr. Ottolengui.—I know that a number of gentlemen throughout the country are using my method of the ether spray, and I would like to say, after seeing Dr. Curtis's method of dehydration

here, that I believe they will get better results with it than they do with the ether spray, though I believe that chloride of methyl is even better, if it can be obtained.

Dr. Dwinelle.—Mr. President, I presume I express the sentiments of every one present when I say that Dr. Curtis has certainly demonstrated all that he has claimed in reference to the new method of local anæsthesia; and I would move that a vote of thanks be extended to Dr. Curtis, not only for his very interesting paper, but for his successful demonstration.

Dr. Dwinelle's motion was carried.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

ODONTOLOGICAL SOCIETY OF PENNSYLVANIA.

THE regular meeting of the Odontological Society of Pennsylvania was held Saturday evening February 1, 1890, at the hall, Thirteenth and Arch Streets. President Truman in the chair. An address on the "Degeneracy of Tooth-Structure" was delivered by Harrison Allen, M.D., who spoke as follows:

I desire, in the first place, to speak of the manner in which the word degeneration will be used in connection with tooth-form. I will attempt to show that degeneration is a form of specialization. Degeneration, therefore, can never be seen in a tooth which is not highly specialized. A degenerated tooth is more apt to appear towards the end of the series to which it belongs than at the beginning. Conceding that the molars of the upper jaw form a true series, degenerations are more frequently seen in the second and third than in the first tooth. The same remark can be applied to all organic structures which are arranged in series. Professor Alpheus Hyatt (On the Genesis of the *Arietidæ*) has called attention to the degenerations which occur in the last-formed chambers of *Ammonites*; these are not different in kind from those in the molar series. An apparent explanation for degenerative changes lies in the fact that the structures which are formed last are at the same time part of a natural succession, and, having a common origin, tend to weaken as they appear at the end.

A degenerated tooth is distinguished from others by the thicken-

ing of the lateral contour-lines. If a tooth (like the bicuspid) is composed of two cusps arranged from the buccal to the palatal surface, the lateral contour-lines are those which connect the anterior and posterior borders of the cusps with each other. A tooth in advanced degeneration may exhibit the lateral contour-lines in such proportions as to equal in height the true cusps, and the tooth may thus appear to be composed of a single cusp which is excavated and truncated. Such a form of tooth may receive the name of crater-like tooth. It is often met with in the human third molar.

A general form of degeneration is seen in the molar teeth, especially in those which vary by the reduction of the normal number of cusps. It is a mistake to assume that when cusps are lost (as, for example, a "four" cuspidate form becoming a "three" cuspidate) the tooth is always an example of the principle of reversion. The cusps may be lost by degenerative process, and no reversion be suggested.

It is evident that, in order to have a reversion, one must demonstrate the form of which the reversion occurs. If I were to take as examples the human teeth and name the variations in their forms on the principle of reversion, I would suggest a motley group of structures,—strange company, indeed, for man and his kinship to keep! For instance, I would bring together ape-like structures, as those seen in *Cebus*, *Alouatta*, *Lemur*, and *Cercopithecus*; hedgehog-like structures, as in *Erinaceus* and *Centetes*; bat-like and mole-like, as in *Atalapha* and *Talpa*; to say nothing of forms suggestive of those of sirenians and rodents, as well as those of ancestry as remote as those of *Phenacodus*, *Peritychus*, and *Coryphodon*, which Professor Cope has told us so much about. Such an insistence is absurd. No; many of the variations in the human jaws are not reversions but degenerations; that is, they are failures on the part of a majority of instances of a given type-form to keep up to the standard. It may be asked, "Are not your degenerations mere monstrosities?" I reply that they are not, since they are consistent within themselves,—are confined to lines within those suggested and maintained elsewhere in the dental series,—they are never eccentric, and always suggest the normal relation of parts as these are seen in the lower animals.

There is a degenerate form of human tooth-structure which is exhibited in the first and second of the series of the upper jaw, which I have ventured to call the *ellipsoid form*, and describe it as follows:

The ellipsoid tooth is a conversion of the quadrate to the ellip-

soid shape of crown. It is an instance worth mentioning that all the ellipsoidal teeth which I have had extracted from the jaw were found, on examination, to be coalescent at the roots. Out of fifteen examples which I have recently examined, six were complete in coalescence; in a word, all three roots were merged into one. In seven, the two buccal or ectal cusps had coalesced; in the remaining two, while all three were distinct, the ectal or palatal cusps were closely proximate in their entire length instead of being divergent as is the rule. It is evident that in this form of tooth less resistance is afforded for the tooth to retain its position in the jaw than would be the case if the roots were widely divergent.

In the living subject I have frequently observed the ellipsoid form of molar tooth, and I have never in a single instance found it in a jaw in which the teeth were of the best type. Very commonly it is the second molar (although it may be the first) which exhibits this peculiarity, and the third molar will show a markedly degenerated simple form of tooth. The ellipsoid tooth is a witness to the weakness in the original germ for the molar series.

Professor Cope replied to Dr. Allen's remarks as follows:

I agree in part and in part disagree with Dr. Allen. I was glad to hear him draw the distinction between pathological and biological degeneration. With reference to the tri-tubercular superior molar of man, I still adhere to my opinion that the type of the superior molar is a reversion to the molar of the primitive mammalia; and since the Lemuridæ are the latest type which displays this tooth in the phylogeny of man, I would call it the lemurine reversion, and the lemurine molar. I think this position is self-evidently correct, and that the molar in question is not a monstrosity. The obtuse form of the cusps is not monstrous but degenerate, and is identical with the modification which takes place in the true molars and the sectorials of the carnivora, where they are similarly tri-tubercular.

Such modification is to be seen in the genus *Paradoxurus* in the bivenidæ; the sea otters and badgers in *Mustelidæ*; and the bears in *Canidæ*.

Professor Cope exhibited the cranium, with molars preserved, of a Tahitian Islander, in which the third superior molar on one side was tri-tubercular, and on the other side monstrous. He also exhibited crania of two species of *Paradoxurus*, in which the superior molars greatly resembled the human tri-tubercular type. He agreed with Professor Allen that a great many monstrous molars are met with in the dentition of civilized races of man.

Editorial.

SPECIAL ANNOUNCEMENT.

WITH this number, Dr. W. X. Sudduth will close his connection with this journal as Editor and Business Manager. This change has been rendered necessary by Dr. Sudduth's appointment as Professor of Pathology and Oral Surgery and Secretary of the Dental Faculty in the University of Minnesota. The transfer of the *Independent Practitioner* to the International Dental Publication Company was principally due to the energy of Dr. Sudduth, and his editorial work has been successful in establishing the Journal upon a satisfactory foundation. The success of the *Independent Practitioner* clearly demonstrated that the profession needed an organ free from entangling influences. This the INTERNATIONAL has endeavored to supply. The editor's duties have been of an extremely arduous character, and it is due to him to say that he has proved that a journal, such as this, can be maintained by the dental profession. The support that has been given it in many directions has been very gratifying to the management, and we have no doubt but that this will be generously continued. The past is an earnest of what the future will be under the new management. It is not proposed to make any immediate change in its present satisfactory appearance; but improvements will be introduced as time and necessity seem to suggest and demand.

The Board of Management, in consequence of the unexpected resignation of the Editor, has been obliged to fill the position temporarily, and have selected the chairman of the Advisory Committee, Dr. James Truman, to fill the vacancy. His duties will commence with the August issue of the journal.

ADVISORY COMMITTEE.

AU REVOIR.

SOME three years ago, while abroad, we conceived the idea of establishing an international dental journal. The need for a high-class independent journal to represent dentists and dentistry was only too apparent. The matter was broached to quite a number of

foreign dentists, and met with such warm expressions of interest that we returned home earlier than we had anticipated in order to present the matter to the dentists in attendance upon the International Medical Congress, to be held in Washington in August, 1887. It was thought best not to make it public at that time, but to use the opportunity to canvass the feasibility of such a movement among those in attendance. It is needless to say that the movement met with favor and took tangible form at that time. During the winter a corps of associate editors, domestic and foreign, was secured, and the matter was brought to the attention of several well-known publishing firms. It was found, however, that it would be impossible to secure that degree of independence of expression necessary to a journal of the character intended if it were owned outside of the profession, and the next step was to form a journal company within its ranks. This movement was set on foot in New York, and met with such universal approval that within two weeks time over ten thousand dollars had been subscribed to put the project on its feet. It was not until then that we fully realized how ripe the times were, and how badly such an organ was needed. Steps were at once taken to organize a publishing company, and the *International Dental Publication Company* was the result. It may not be uninteresting to know that it is chartered under the laws of the State of New Jersey with a capital stock of five thousand dollars,—that amount being considered sufficient to establish the JOURNAL. This stock is owned by over one hundred dentists in active practice, and as much more could be placed if it were considered desirable to do so. The JOURNAL has been a paying investment from the beginning, and is now fully established as the recognized organ of the profession. The task has been no easy one, and had we known just how difficult it would have been, it is doubtful whether we should have gone into it. It was the first effort ever made to organize the dental profession into an association with an organ for its defence. The need of such a movement had long been felt, but the evident lack of *esprit de corps* in the profession had deterred others from making the attempt. This difficulty has, however, been overcome, and dentistry stands to-day fully organized with an organ which has demonstrated its fitness to occupy the position its promoters sought in the first instance to establish for it. It is *international* in character, *independent* in speech, *broad* in spirit, and *high* in tone.

As has been intimated in the announcement by the *Advisory Committee*, with this issue our active duties as Editor and Business Manager close. This step is made necessary by our appointment to

a position which seems to give promise of a field of labor more in keeping with our tastes. The active work on the JOURNAL has so absorbed our time for the past two and one-half years that we have been unable to pursue our favorite lines of research in biology. It is with regret that we sever an association which has been so pleasant in the main, but in doing so, we do not go out of the company, our interests will still remain in it, and we shall always be found working for its advancement. The business of the Company will be placed in reliable hands, that will give its financial management their entire attention. This has been considered absolutely essential, as the rapidly-growing business is so absorbing in its demands that no professional man, actively engaged in practice or scientific work, can find time to attend to it. There will be no change in the policy of the JOURNAL. Dr. Truman has, as chairman of the Advisory Committee of the Board of Directors, been so intimately associated with the management of the JOURNAL that the work will go on without a jar, and the INTERNATIONAL will continue to stand in the future, as it has in the past, the fearless voice of the profession. Dr. Truman is too well known to need any word of introduction at our hands. His long experience as teacher and active worker in the profession pre-eminently fits him for the position, and the Company is to be congratulated that he has consented to assume the editorial chair even temporarily, and it is to be hoped that he may find it to his interest to continue in the position.

W. X. SUDDUTH.

THE CONVENTIONS.

By the time this number reaches its readers, the members of the profession, both in this country and in Europe, will be preparing for the annual gatherings. This year is peculiarly full in this direction and promises to be one prolific in changes; whether for good or ill will depend on those who have the controlling influence. The need of readjustment of old lines of labor must be quite apparent to the average observer. The present status of convention work is not up to the level of its origin. The defects are apparent to all; but the remedy is not so clear. There is one point that all the active workers will agree upon, and that is that the profession, as a whole, fails to appreciate the importance of maintaining, to the highest standard, our representative associa-

tions, whether they be held in this country or Europe. The work of supporting these falls upon a fraction of the twenty thousand dentists, probably, now in the United States. It would seem that, aside from the natural desire to meet with and hold fraternal communion with widely separated members of a common calling, there should be a feeling, rising to an inspiration of duty, calling all to assemble at least once a year and aid by their presence, if not by more active effort, the work of progressive development.

This year the American Dental Association will meet at Excelsior Springs, Mo. It will open up to many in the East a favorable opportunity, not only to meet our Western brethren, but to make the acquaintance of a most interesting portion of our country under the most favorable circumstances. That the dentists of that section will be there in force is assured; but it will be a matter of regret if other portions fail to respond as they should.

The International Medical Congress of Berlin will, doubtless, draw a large number of the old and earnest workers away, and it is to be regretted that an effort was not made last year to avoid a clashing of time, for, as the matter stands, it will have a tendency to weaken the representation in both directions,—Excelsior and Berlin. An earnest effort has been made to correct this mistake by calling the American Dental Association at an earlier period; but up to this writing there has been no change made in the original programme.

The work of all these bodies will soon be laid before the readers of the professional journals, and should prove an incentive to greater individual and collective work in the future.

JAMES TRUMAN.

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ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. CHARLES E. SAJOUS, M.D., and Seventy Associate Editors. Philadelphia: F. A. Davis, Publisher.

The *Annual*, although delayed some twenty days by the hold La Grippe had upon the editorial staff, appears bright and fully up to its former standard, and gives no evidence of lessened vitality in its editing or publication. On the other hand, several new departments have been added: One on Syphilis, by J. William White, Philadelphia, and another on Surgical Mycoses, by Ernest Laplace, also of Philadelphia. The department of Oral Surgery has been

given to R. Matas, New Orleans, who has handled the subject in a masterly manner.

This chapter alone is worth the subscription-price of the work to all dentists who have a liking for that branch of dental practice. On the whole, the work is invaluable as a review of the very latest work done in medical science, pointing out as it does the best line of thought presented during the past year in all the different countries of the world. Reference is made to the authority in every instance, thus enabling the reader to seek the original and read the article in its entirety, if it is desired so to do. Forming as it does a complete *résumé* of scientific progress in medicine, we do not see how any progressive man can do without it, especially if he desires to write for publication.

W. X. S.

PHYSIOLOGY OF THE DOMESTIC ANIMALS. A Text-Book for Veterinary and Medical Students and Practitioners. By ROBERT MEADE SMITH, A.M., M.D., Professor of Comparative Physiology in the University of Pennsylvania. Pp. 938. Price, cloth, \$5.00; sheep, \$6.00 net. Philadelphia: F. A. Davis, publisher.

The author of this volume has spared neither time nor pains to make it of value to those interested in the important subject of physiology. His matter is arranged in a logical manner; Part I. is devoted to General Physiology; Part II. to Special Physiology; and Part III. to the Reproductive Functions. Over four hundred good illustrations adorn the work and add light to the contents.

In these days of multiplication of books it is seldom that one can be written which may be truly said to fill a want. But up to this time there has not been in English a work of this special character, and as the great importance of comparative physiology in the study of that pertaining to man can hardly be overestimated, we heartily welcome the advent of this book.

W. X. S.

Foreign Correspondence.

TO THE EDITOR:

DEAR SIR,—In the very practical paper of Dr. Ottolengui, in your journal, the matter of plaster impressions is referred to, coloring the water used for the plaster of the model being recommended. In Kingsley's "Oral Deformities," coloring the water used for either impression or model is spoken of, while in "The American System of Dentistry" the method is not mentioned at all, the reader being told to use either shellac or sandarach varnish, to the use of which, however, your essayist rightly objects, the soap solution being quite sufficient when the method of coloring is adopted. What I have used, and my father before me, for many years, seems to me quite unobjectionable, and fulfils one or two conditions not attained by the method mentioned. It is simplicity itself, and merely consists in the admixture of a grain or two of colored powder, sold by chemists as "rose pink," with the plaster used for the impression. This small quantity gives it a delicate pink color, and the mixture has very much the appearance of strawberry or raspberry ice-cream, perhaps not quite so deep, but, at any rate, it serves in great measure to take away from the mind of the patient the disagreeable idea of having raw, undisguised plaster put in the mouth. The color also serves to distinguish your impression from your model plaster. The mixture can easily be made by your office-boy, and, for that matter, I do not see why dealers should not have all their impression-plaster colored in this way. I do not like the idea of the model being colored, a pure white model being the more acceptable to most dentists, I imagine. Again, in separating the impression from the model, the colored portion is more distinctly appreciated by the eye in breaking away pieces, and, therefore, that portion should be the one forming the impression which lies uppermost in taking it off.

I enclose a tiny sample for color.

Wishing the INTERNATIONAL all success,

I am yours faithfully,

W. H. WILLIAMSON.

ABERDEEN, SCOTLAND.

Domestic Correspondence.

TO THE EDITOR:

Refining Waste Amalgam.—The question of the easiest and best method of refining amalgam scraps, either those which have been mixed up and not used, or old fillings, so that they can be again utilized, is of interest to every practising dentist.

It is well known that mercury boils at 357° C. and can be driven off from amalgam by a sufficiently high heat. The other metals present are not very easily volatile, and, if they can be prevented from oxidizing, should be left in a condition to again form an amalgam on the addition of mercury. I have made some experiments in this line, and find that this result can be obtained in the following manner.

The mercury may be allowed to escape, or the process can be conducted so as to preserve it. In the former case the operation should be carried on where there is a good draught to remove the vapors of mercury so as to escape the danger from breathing them. It is only necessary to heat the scraps in a crucible until the mercury is expelled, using a flux to prevent the oxidation of the alloy. A sand crucible may be employed and a coal-fire, or any heat by which it can be raised to redness. As a flux, borax glass—borax which has been fused to drive off the water of crystallization—answers very well. The amalgam should be placed in the hot crucible in small portions so that it may not be thrown out by the sudden conversion of the mercury into vapor. Enough borax should be used to form a ring when melted around the button of alloy, and the heat must be maintained until the mass has come to a quiet fusion and the globules of mercury at first seen on the walls of the crucible have disappeared. The metal can then be poured out and the ingot reduced to the necessary fineness by any of the common methods. As a convenient means of doing this I have been accustomed to pour the mass into an unglazed porcelain mortar which has been heated so that it can hardly be held in the hand and grinding quickly with a warm pestle. By a little practice

the metal can be, by this means, reduced to a fine state. The coarser particles may be sifted out by a fine wire gauze and remelted. As some of the borax will probably remain mixed with the alloy, it is advisable to boil it a few minutes in water that this may be removed if present. After drying it is ready for use.

If the mercury is to be recovered, the scraps must be heated in a mercury retort or a crucible with a bent tube inserted through the cover. The mercury will distil over through this and can be condensed where there is no possibility of breathing the vapor. When as much as possible has been removed in this way the heating should be continued a short time with the crucible open in order to expel the last traces. The residue can then be treated as described above.

E. W. ROCKWOOD,
*Demonstrator of Chemistry in the Dental
Department State University of Iowa.*

Clinical use of amalgam proposed by the method above described has failed to show any material difference between it and the original alloy; if any, it is in its favor, as it seems to work more smoothly, and is rather more plastic. It has good edge-strength and good color and takes a good finish. By this method, which is simple, a considerable saving can be made by those who have been in the habit of throwing their amalgam scraps away or selling them to the dealers.

A. O. HUNT.

TO THE EDITOR:

Mouth-Breathing.—In discussing the various causes of irregularity of dental arches at the recent anniversary meeting of the First District Dental Society of New York, several of the speakers declared "mouth-breathing" to be one of the causes of these irregularities. It was argued that the force of pressure against the side teeth, produced by the muscles of the face, where the mouth is kept open so much of the time, tends to contract the arches by flattening them on either side and causing the incisors to protrude.

Many times have I observed that children with contracted dental arches were in the habit of breathing through their mouths, yet it never occurred to me that such deformities were produced in this manner. Whether such is a fact or not, I would hardly venture even an opinion; but this I can safely assert, that mouth-breathing is a habit as pernicious as it is unnatural. It tends to distort the

entire expression of the countenance, giving a naturally fine-looking face a weary, ugly, and prematurely old appearance.

It is a wonder to me that so many persons have contracted and will permit themselves to continue so disgusting a habit. If they could but see themselves as others see them, with their lips rolling apart, their teeth (often uncleanly) and a large territory of gums exposed, together with pinched nostrils and the agonized expression of their faces, it seems to me that they would learn to put their noses to the use for which they were intended.

Mouth-breathing tends to keep the mucous membrane of the mouth and throat in a dry and irritated condition, and I often think favors the production of caries.

C. E. FRANCIS, M.D.S.

NEW YORK.

TO THE EDITOR:

In much of the cranial development in the world it would seem that phrenologists might have considerable difficulty in finding anything to indicate the faculty expressed by "*why*" in the intellect of the owner. For in every walk of life we find mortals stumbling along, trying to find the pathway by the dim light of a few hastily-lighted and poorly-trimmed conclusions, the result being that mankind often finds a counterpart in the parrot, which can imitate a few things fairly well.

No man will excel in his occupation unless he knows the "*why*" of what he is doing. The stone-mason is no better than a machine, unless he knows the nature of the material he employs and why it brings certain results.

A "skilled" mechanic will not be skilled, unless he knows something of the "*why*" of what he is doing; that is, he must know the characteristics of the materials he uses and why certain results are obtained. Then, only, can he accomplish the highest and most perfect success.

Many students go through their school-life with "*why*" left out, and here it is, probably, that much of this defect originates,—in not developing more of the reasoning powers. Often it is that a child's lessons are so, because the book says so,—"*why*" it is thus, is to them an unfathomed sea.

In schools of medicine and of dentistry much of the same element is manifest. "*How*" usually occupies the front seats, while poor "*why*" is pushed to the outside. In professional life the same factor comes up again. A person is sick and is given a certain

drug,—“why?” Oh, because a certain *materia medica* stated that it is one of the best drugs for that certain disease; or worse yet, as we have seen an M.D. do, copy his prescriptions from some textbook.

An alveolar abscess is presented for treatment, peroxide of hydrogen is used,—and “why?” Because it acts nicely in cleansing the cavity and was advised by Dr. ———. A patient comes with a tooth that is aching severely, and demands extraction, and it is done. Why did it ache? From irritation at some other part of the fifth nerve. The effect has been treated; the cause remains. An edentulous mouth needing artificial substitutes may present difficulties in the way of a satisfactory adaptation. A large, deep air-chamber is put in the upper case. This will usually hold the plate in position until the membranes and sometimes the hard parts fill the vacuum, when the teeth must be reset and a larger air-chamber made. If “why?” had been first employed, the model would have been scraped at the points offering the least resistance in the mouth, producing an even and continuous pressure from the plate, when, if any absorption occurs, it would be more nearly equal.

In dental conventions the first question in the discussion of a clinic or essay is too often, “Doctor, how do you do that?” It may be that some extreme (but true) illustrations have been here cited, and it will not be denied that “how?” is a little less prominent than in times past, but let us always give more attention to the cause, and in all our study and labors make foremost and most prominent, “why?”

M. G. JENISON, M.D., D.D.S.

MINNEAPOLIS.

TO THE EDITOR :

At a meeting of the St. Louis Dental Society, held on Tuesday, May 20, 1890, the following resolutions on the death of Dr. Homer Judd were adopted :

WHEREAS, The members of St. Louis Dental Society have learned with great sorrow that death has removed from us our loved and honored associate, Dr. Homer Judd ; and

WHEREAS, By reason of his great natural abilities, ripe scholarship, zeal, industry, and integrity, he was recognized by the dental profession as one of its most influential members ; a man who devoted his life to the honor and advancement of his profession ; and

WHEREAS, During a long professional life, his relations with this society have been such that it is our pleasure and duty to record our high appreciation of him; therefore

Resolved, That by the death of Dr. Homer Judd the dental profession has been deprived of one of its most able and useful members, one whose influence for good will live forever.

Resolved, That we extend to his family our sincere sympathy in their great bereavement.

Resolved, That a copy of these resolutions be sent to the family of the deceased and to the dental journals for publication.

W. H. EAMES,
HENRY FISHER,
A. J. PROSSER,

Committee.

MRS. EMMA EAMES CHASE,
Cor. Secretary.

TO THE EDITOR:

The Dental Protective Association.—The association is progressing nicely. We have a large membership and a large amount of testimony in regard to crown- and bridge-work antedating all patents owned by the D. P. C. Co. The company does not dare sue any member of the association nor proceed with old suits taken charge of by the association. We guarantee protection against any of their patent claims, and to take charge of all suits brought against members and pay expenses. The membership fee is only ten dollars, but will be increased soon.

J. N. CROUSE, *Chairman.*

Current News.

AMERICAN DENTAL ASSOCIATION.

THE Thirtieth Annual Session of the American Dental Association will be held at Excelsior Springs, Missouri, commencing Tuesday, August 5, 1890, at 10 o'clock, A.M.

GEO. H. CUSHING,
Recording Secretary.

MEETING OF THE AMERICAN DENTAL ASSOCIATION.

THE railroad arrangements are not all completed, but enough is known to assure, at least, the usual reduction of one and a third fare, on certificate plan, by all the different passenger associations.

Arrangements are being made for a special train from Chicago, which will leave here Sunday afternoon and reach Excelsior Springs Monday morning. This will give the entire day, Monday, for the different sections to complete their reports. All parties wishing to go on this special train will confer a favor by letting us know at once, so that we may know how many to arrange for. Just what rate will be secured for the round trip is not definitely settled, but we expect a low one. A notice will be issued later giving exact time of starting and route selected. Application has been made for reduced rates for the four associations,—The American Dental Association, College Faculty Association, National Board of Dental Examiners, and The Dental Protective Association. We are trying to get this rate good for ten days, so that we need not adjourn until everything is finished.

Parties purchasing tickets should be sure to get receipt, showing that they have paid full fare going, which will enable them to get return tickets for one-third regular fare.

J. W. CROUSE,
Chairman Excursion Committee.

2231 PRAIRIE AVENUE, CHICAGO.

THE "germ-theory" is thus defined by Dr. Wardlaw: Particles of food, mucus, or saliva, wedged between the teeth or hid away in some fissure, or being in some depression, or adhering to some protected surface of a tooth, and not removed by friction, nor dissolved nor washed away by the fluids of the mouth, are taken possession of by bacteria, and fermentation begins; lactic acid, the effete matter of the microbes, is formed, and immediately unites with the lime of the enamel; a slight depression is here made, giving more secure lodgement for additional food, and further fermentation continues. The enamel armor is thus gradually pierced, and the less dense dentine is exposed: ingress is had by the bacteria; they consume the organic elements of the dentine; lactic acid is secreted more abundantly; it presses forward in advance, breaking down the walls of the tubuli; the micrococci follow closely on, crowding in and packing full the tubuli; a secure foothold having been obtained, destruction runs riot; softening and breaking down proceeds in all directions, and we have a typical case of "caries."

DR. S. A. WHITE treats fistulous opening from the outside, in ninety-nine cases out of a hundred one thorough injection of pure creosote and iodine being found sufficient; the root is filled at the same sitting, and usually in a week no trace of the fistula can be found.

PENNSYLVANIA STATE DENTAL SOCIETY.—The twenty-second annual meeting of the Pennsylvania State Dental Society will meet at Gettysburg, Pa., on Tuesday, July 29, 1890, at 10 A.M., session to continue three days.

C. V. KRATZER,
Recording Secretary.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.—The National Association of Dental Faculties will meet on Monday, August 4, 1890, at 10 A.M., at Excelsior Springs, Missouri.

JOHN S. MARSHALL, *Secretary.*

THE dentist can do more and better work by sitting at the operating-chair. I use an ordinary office screw-chair.

W. C. BROWNE.

THE International Dental Journal.

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No. 8.

Original Communications.¹

ON THE DANGERS ARISING FROM SYPHILIS IN THE PRACTICE OF DENTISTRY.²

BY L. DUNCAN BULKLEY, A.M., M.D.,

Attending Physician to the New York Skin and Cancer Hospital, etc.

HAPPILY the recorded instances of the communication of syphilis in connection with the practice of dentistry are relatively few in number when compared with the very numerous cases on record where the disease has been acquired through other innocent channels; for, it must be remarked, the number and variety of modes by which this disease has been spread innocently from one person to another, entirely without sexual transgression, is manifold greater than could be supposed or imagined by one who has not investigated or given some attention to the matter.

The subject of the innocent transmission of syphilis is a very large one, and one to which the public health officials might well direct their attention; but at the present time we can consider only a very small and limited subdivision of it,—namely, as the existence of the disease may in any way bring danger through or to any one

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the New York Odontological Society, April, 1890.

in the practice of a single branch or specialty in surgery,—that of dentistry.

Although, as before stated, the reported instances where syphilis has been communicated in connection with, or during the operations of, dentistry, are relatively few, nevertheless, there are a sufficient number of cases on record not only to show clearly that this unfortunate accident has repeatedly occurred, and may readily happen, but also to direct our attention to the methods or channels through which this may take place, and so to indicate the means by which the danger may be escaped or avoided. To develop these points will be our task this evening.

It would be quite out of place in this assembly to attempt fully any consideration of syphilis as a disease, or even to give a description of its different manifestations and effects, which are more varied and manifold than those of any other known malady. But before entering upon our subject proper, it may be well to briefly recapitulate the points which are well established in regard to the nature and pathology of syphilis, in order that the real dangers arising from the disease may be better understood, with the reasons therefor.

Syphilis is no longer to be looked upon with the utter abhorrence with which it has been regarded in times past, when it was always believed to be the result of sexual transgressions; it is not, indeed, to be considered always as a venereal disease, for advancing knowledge has revealed, and science recorded, thousands of cases where it has been acquired in scores of ways, where the unfortunate victim was as innocent as is one who catches small-pox, scarlatina, or measles; but, of course, the fact still remains that in the enormous majority of instances syphilis is acquired in sexual intercourse, because here is offered the greatest opportunity for abrasions to occur, through which the poison may gain entrance. But, on the other hand, hundreds, or even thousands, of physicians themselves and midwives, have contracted syphilis in the practice of their calling; in numbers of instances it has been conveyed in vaccination, tattooing, cupping, and breast-drawing, and, in fine, there is no end to the curious and previously-unexpected methods by means of which this disease has been innocently communicated from one person to another.

This innocent transmission of syphilis has also occasionally happened in the practice of the various departments of medicine and surgery. Not only have midwives acquired the disease in the practice of their calling, but several small epidemics are on record

where a number of women, and from them their children and others, have acquired syphilis from a chancre on the finger of the woman who had delivered them. The disease has also been communicated in various surgical operations, and a striking illustration is found in the history of Eustachian catheterization, where as many as sixty cases were traced to the practice of one person. Instances will be given later where it has occurred in some of the operations of dentistry.

Syphilis is a well-defined disease, depending always upon the entrance of a definite, specific poison, which has never been perfectly isolated, and of whose exact nature we know nothing. It is most probably due to a micro-organism, but although this has been thought to be discovered on several occasions, it has never been satisfactorily demonstrated, nor have inoculations been made with success by any pure cultivation of the same. It suffices for our purpose, however, to recognize that there is a poison, capable of entering the system, and thereby causing syphilis, which can reproduce or multiply itself there, and again, under proper conditions, communicate the disease to all who are properly and sufficiently exposed to its influence.

The poison always enters the system at some definite point, and at this place, generally within from two to four weeks, a local sore, termed a chancre, develops, which is the first external sign of the syphilitic invasion. This sore presents quite different appearances under different circumstances and in various localities, and time fails to attempt to describe these; their appearances may be learned from many recent text-books and journal articles. The only exception to this mode of entrance of the disease is found in the case of hereditary syphilis, where the poison enters with the life, and possibly in some other rare conditions, which need not be entered upon here.

For the entrance of the syphilitic virus a broken epithelial or epidermal surface is necessary, although apparent exceptions to this rule have been occasionally met with. But in some way the poison must come in contact with the absorbing elements of the body,—either blood-vessels or lymphatics,—and by them be taken into the circulation, where it multiplies and produces lesions in various parts of the body, and then probably increases also in the tissues. When once the virus has gained entrance, the individual is syphilitic, and unless the disease is checked by treatment, it will go on to produce its manifestations, even for many years.

The period during which syphilis is actively inoculable has

never been definitely determined, and will probably never be accurately known. It is certainly very contagious, under proper circumstances, during the first year, and also for many months thereafter, and cases are on record where infection has occurred from cases many years advanced in syphilis; indeed, the point or period has never been determined when danger ceases. Although it is questionable if syphilis is often communicated by patients five years after their infection, no prudent man would ever take a shadow of a chance of personal inoculation at this or even at a very much later period. Treatment, of course, greatly modifies the infective power of the disease, and under the fullest possible measure of proper treatment the contagious character of syphilis is greatly lessened, if not entirely destroyed, in some cases, even in the earlier stages of the disease. But all these "ifs" and qualifying statements only show what a dangerous and treacherous affection we have to deal with, and how difficult it is always to be certain of immunity from danger.

The poison of syphilis may be received from four different sources,—1, the initial sore or chancre; 2, from mucous patches; 3, from syphilitic ulcerations; and 4, from the blood. These we will briefly consider in above order.

1. The chancre, or initial sore of syphilis, is occasionally found upon the lips, tongue, and other portions of the buccal cavity, but generally the lesion is so marked and painful that the patient avoids the dentist, and there is relatively little danger of infection from this source. But, on the other hand, this danger sometimes occurs, as in the instance of the case which fell under my own observation, about to be described, where the gentleman, supposing that the chancre was only a local sore, due to sharp and rough teeth, went to his own dentist, and had them filed off, even when the ulcer was very painful and giving off an abundant, virulently contagious secretion; so that his dentist must certainly have been exposed to the same. It is well, therefore, in the case of doubtful sores about the lips, tongue, or mouth, either to be assured of their harmless nature or to exercise such precautions as will insure perfect protection to self and others, which will be considered later.

2. The second source of the contagion of syphilis—namely, mucous patches—is far more fruitful of infection, and that against which special care must be exercised. It is to be remembered that at one time or another these lesions appear in a greater or less amount on the buccal mucous membrane of almost every case of syphilis, so that at some moment or other almost every case is

capable of communicating the disease from this source of contagion. Mucous patches are slightly raw surfaces, of various sizes and shapes, which are at first elevated slightly, and then may become depressed by the loss of the epithelial covering. When newly developed, they are of a redder color than the normal mucous membrane, but later may become of a grayish white. They are always superficial lesions, and often do not cause much annoyance, so that the patient may readily attend to all the duties of life, and may go through considerable dental manipulation while having an abundant crop of mucous patches on the tongue, lips, or buccal cavity. The secretion from them is sticky and intensely contagious. It is from these lesions that fresh chancres are most commonly contracted, and it is this secretion which, adhering to instruments and articles of use or convenience,—such as cups, spoons, pipes, etc.,—commonly gives rise to syphilis in most unexpected manners.

3. Certain deeper ulcerations of syphilis may sometimes give rise to contagion, especially when they occur in the earlier stages of the disease; but practically very few instances of contagion are ever from this source, although this danger should always be guarded against as well.

4. The fourth source of syphilitic infection—namely, the blood—is the least likely to present dangers in connection with dentistry. It is, however, quite possible for blood, which is drawn during an operation or by accident, to communicate syphilis, if it chance to find a proper opportunity to enter another individual. It is just the uncertainty in regard to the possibilities of infection which gives to our subject such great practical interest. In few, if any, of the dozens of methods by which the disease has been innocently transmitted from one person to the other was the possibility of such an accident known, or even suspected, beforehand.

We will now consider some of the observed facts in regard to the communication of syphilis in dentistry, and afterwards examine the modes of transmission and the means of prevention. Our clinical study will naturally divide itself into two lines of thought,—1, in regard to the dangers from syphilis to *patients* undergoing dental operations; and 2, in regard to dangers to the *operator* from the same source.

1. First as to dangers to the *patient* from exposure to the syphilitic poison during dental operations.

Inasmuch as it presents many points of interest, relating both

to the patient and operator, I may be allowed first to recite the case alluded to, which came under my own observation and treatment, and which first called my attention particularly to the subject.

Mr. X. W., a gentleman of intelligence and position, aged 60 years, came to me September 11, 1884, on account of a sore on the tongue, which he feared to be a cancer. The history was, that some ten weeks before his first visit, he had first noticed a little point of soreness, which had gradually increased in size, in spite of treatment, until latterly it had come to give him considerable annoyance, so that he was conscious of its presence at all times: the true nature of the sore had evidently not been recognized.

On examination, there was found on the right side of the tongue, about an inch from its tip, a hard, inflamed mass, nearly half an inch in diameter, the centre ulcerating and the edges somewhat everted; it was not painful except when irritating food or drink touched it. The two upper molars were found to have sharp and rough edges, and he had been wearing a red rubber plate until recently. There was a small and painful gland beneath the jaw on that side, slightly enlarged.

Thinking that the ulcer might possibly be due to irritating local causes, he was given a soothing mouth-wash, and an alkali internally. Five days later there was a marked improvement in its condition; the ulcer had a less angry look, but its edge was more clearly defined as the inflammatory element had somewhat subsided. He had been, of his own accord, to his regular dentist, and had had the roughened teeth made smooth, and had left out his set of artificial teeth.

From a careful second study of the case, I then felt convinced that the sore was a chancre, a primary lesion of syphilis, and he was immediately put on antisyphilitic treatment; the general eruption and other symptoms which followed a few weeks later rendered the diagnosis certain, together with the remarkable manner in which the sore healed and symptoms vanished under the proper treatment for syphilis.

In searching for the mode by which the syphilitic poison had gained entrance, it was learned that, during the month or so previous to the appearance of the sore upon the tongue, he had, through the persuasion of a friend, been under the care of a dentist of the cheaper, advertising order, who, he had noticed, was not at all cleanly either in his person or with his instruments. He could not locate the exact date of the injury of the tongue by the

dental instruments, but work had been done in that locality, and he remembered the instrument occasionally slipping, as will often happen, inflicting injury to the soft parts. He was a married man with a family, and was very desirous of learning how he had become infected; he had certainly not been exposed in sexual intercourse, nor in any other manner which we could discover.

The interesting points in the case are: First, that while the proof is not absolute that he was infected in the dentist's chair, still the circumstantial evidence is so strong that little if any doubt can be entertained that the poison came through this channel. The habits and ways of the particular dentist were such that poisonous material from the mouth of a previous syphilitic patient could readily have been transferred on instruments or otherwise to the wound made in the tongue, either by the sharp teeth or by a slip of an instrument. The second interesting point is that this patient, before the true nature of the disease was ascertained, had been to his own regular dentist for smoothing the teeth, and so had certainly exposed him, and others through him, to the poison, which was secreted freely from the raw surface of the chancre.

The earliest recorded cases of the transmission of syphilis in dental operations are in connection with the transplantation of teeth, during the last quarter of the eighteenth century.

Sir William Watson¹ published a case of this description, and John Hunter² relates two similar cases about which there can be no doubt. J. C. Lettsom³ also recorded three cases: of these one was personal, one seen by a Dr. Hamilton, and the third occurred in America, having been observed by Kühn in Philadelphia; these gentlemen furnished notes of the cases to Dr. Lettsom. This mode of transmission does not occur again in literature, to the knowledge of the writer, although Gibier⁴ says that "Cases have been recently related." In view, however, of a recent revival of the operation of tooth transplantation, or implantation, it is quite possible that the future may furnish fresh instances of this mode of the innocent acquiring of syphilis.

From this period no other causes of the transmission of syphilis through dental procedures are found recorded for nearly a century;

¹ Watson, "Transactions of College Surgeons," 1785, iii. p. 828.

² Hunter, "Treatise on the Venereal Disease," 1st Engl. ed., 1786; 1st Amer. ed., Phil., 1818, p. 882.

³ Lettsom, *Transactions Lon. Med. Soc.*, vol. i., 1787, p. 187.

⁴ Gibier, "Ann. de Dermat. et de Syph.," 1882, p. 129.

indeed, not until the advent of modern operative dentistry and active medical observation.

The first case met with is one reported by Dr. C. W. Dulles,¹ of Philadelphia, and which was also seen by the late Dr. Maury. The patient, a female domestic, of excellent character, developed a chancre of the lip two weeks after a visit to a dentist; on that occasion he extracted a tooth, and later did some cleansing of the teeth. Although no confirmation was obtained, it seemed reasonable to suppose that the operation of extraction was in some way responsible for the inoculation.

Dr. F. N. Otis² also mentions a chancre of the lip which occurred in a gentleman "about three weeks after a morning spent in a dentist's chair."

Lancereaux³ relates a similar case of chancre of the lower lip in a woman, after extraction of a tooth and other dental work, and Giovannini,⁴ of Bologna, has reported a chancre of the lip apparently from a dentist's instrument.

Leloir⁵ mentions having seen a man with chancre of the gum, in whom the infection seemed to have taken place in consequence of cleaning and filling a cavity in a tooth with soiled instruments. Lydston⁶ has likewise reported the case of a woman with syphilis, in whom the chancre on the gum, below the lower middle incisors, appeared to be the result of some cleaning and repairing of the teeth done three weeks previously; the glands beneath the jaw were enlarged, beginning a week or more after the appearance of the sore on the gum.

¹ Dulles, *Phil. Med. and Surg. Reporter*, Jan., 1878.

² Otis, "Lectures on Syphilis," New York, 1881, p. 102.

³ Lancereaux, "Proc. Acad. de Méd. de Paris," *Union Méd.*, 1889, xlviii. p. 655.

⁴ Giovannini, "Le Sperimentale," 1889, p. 262.

⁵ Leloir, "Leçon sur la Syphilis," 1886, p. 62.

⁶ Lydston, *Journ. Amer. Med. Assoc.*, 1886, vi. p. 654.

(To be continued.)

TANNIC ACID: ITS INTERNAL ADMINISTRATION FOR HEMORRHAGE AFTER TOOTH EXTRACTION.¹

BY DR. W. L. ROBERTS, WEYMOUTH, MASS.

TANNIC acid, as we all know, has a yellowish-white color and strongly astringent taste. It is decomposed and entirely dissipated when thrown on red-hot iron. It is very soluble in water and less so in alcohol and ether. Its solution reddens litmus and produces with solution of gelatin a white flocculent precipitate, and with solution of the alkaloids white precipitates, and is very soluble in acetic acid. Dose from three to ten grains.

Very little has ever been written, and less said, upon the internal administration of this most valuable adjunct to our list of hæmostatics.

The most of us do at times have those perplexing cases of hemorrhage from extraction which are very hard to control, and necessarily resort to numerous devices to bring about the desired results, all or a portion of which are very disagreeable to both dentist and patient.

Tannic acid, administered internally in proper doses, will stop, I believe, any case of hemorrhage caused by tooth extraction, in from thirty minutes' to one and one-half hours' time. The manner and results of administering this very simple remedy I will illustrate by one case in practice.

I was called, March 25, 1885, at 8 P.M., to check hemorrhage from the lower gum of a lady, caused by the removal of eight badly-decayed and broken-down teeth. They were removed while patient was under nitrous oxide gas, with no more laceration of the gums than generally occurs. Patient did not bleed very profusely at the time, but as she was of a hemorrhagic diathesis I kept her there until it had entirely ceased, with instructions to call me at once if there was a return of the hemorrhage to any great extent. As she lived some distance away, and being at home alone, I did not hear from her until about 7 P.M., when her husband came to me with the information that his wife was bleeding to death. I immediately went to their residence and found the patient in a bad state indeed. Pulse was very weak, and she looked about

¹ Read before the Union Meeting, Springfield, Mass., October 25, 1890.

ready to expire, but there was life, and, upon inquiry, I found that she had expectorated nearly one quart of blood. Upon examination I found blood oozing from all portions of the gum. I immediately placed three grains of tannic acid in one-third glass of water and gave her two teaspoonfuls every five minutes until she had taken three doses, then two teaspoonfuls every fifteen minutes; after the second dose the flow had diminished to such an extent that I left them with instructions to administer the same amount every half-hour, which they did, and were only obliged to give two doses before it ceased entirely, with no return.

I have used tannic acid for the past five years, whenever occasion presented, with the same good results, in fact it has never failed me.

Now, what is its physiological action. From experiments on animals with very large doses, it appears that this acid renders the gastric mucous membrane pale and lustreless and coagulates its mucus. Injected into the blood-vessels it coagulates the albumen of the blood. To the former of these actions, as well as to its inherent astringency, must be attributed the dryness and sense of constriction which it produces in the mouth and fauces.

We are told that tannic acid is not absorbed and does not circulate as such, but is converted into gallic acid. It is true that in this form alone it is found in the blood and urine. Indeed, it could not remain in the blood without coagulating it, as experiments on animals demonstrate; but as gallic acid is not an astringent, it is difficult, while admitting the conversion of the one acid into the other, to explain the therapeutic operation of the latter.

Several theories have been proposed for this purpose, but, as far as I can find, all of them are unsatisfactory.

Lewin has shown that the coagula of albuminous substances formed by tannic acid, if made slightly neutral, loses its coagulating power. Thus an albuminate of tannin formed in the blood is dissolved again in an excess of that alkaline liquid. A small portion of tannin escapes neutralization and is discharged with the urine unchanged, and hence, according to Lewin, tannin, as such, may exert its power in all parts of the system. It would appear, also, that the hæmostatic and analogous qualities of tannic acid are due not to an action upon the blood, but upon the blood-vessels, by which they become contracted and the flow of blood through them is checked.

We also see in nervous patients frequent anomalies of the vasomotor and trophic functions, but up to the present time we know

comparatively little that is certain as to the precise nature of their occurrence.

Physiology distinguishes two varieties of vaso-motor nerves,—the vaso-constrictors and the vaso-dilators; but since experiments have detected the latter variety in only a few places, for example, in the chorda tympani, the nervi erigentes, and the sciatic, they have not acquired a very great significance in human pathology. We are at present much more disposed to refer every abnormal constriction of the vessels to an irritation, and every abnormal dilatation of the vessels to a paralysis, of the vaso-constrictor nerves, although perhaps pathological conditions of irritation of the vaso-dilators may not be at all rare. In regard to the precise anatomical course of the vaso-motor nerves, it is necessary to state that vaso-motor irritations may certainly proceed from the cerebrum, as is shown by the well-known symptoms of blushing and pallor from mental emotions. In experiments on dogs Eulenburg and Landois have succeeded in producing a fall of temperature on the opposite side by irritating certain portions of the cortex in the immediate vicinity of the motor centres, and by extirpation of the same parts they have produced a rise in temperature. It is now known with certainty that there is an important vaso-motor centre in the medulla oblongata, the irritation of which, directly or reflexly, is followed by an almost universal vascular constriction, and its destruction by an almost universal vascular dilatation. We must probably seek the further course of the vaso-motor nerves largely in the lateral columns, from which they pass out chiefly by the anterior roots; but there are also experimental data suggesting the presence of vaso-motor nerves in the posterior roots. It is not known with certainty whether there is any decussation of the vaso-motor fibres, or, if there is, where it occurs. The larger part of the vaso-motor nerves collect, at any rate, in the principal trunks of the sympathetic, from which, as is well known, the separate plexuses that surround the vessels arise. It is probable, however, that there is in part a direct passage of vaso-motor fibres from the cord into the peripheral nerves. There are also ganglia in the walls of the blood-vessels themselves that are capable of maintaining the tone of the circulation in the absence of the central force or influence, but under ordinary conditions these minor ganglia are denominated and controlled by the one central power which unifies the whole system and renders it complete.

But, be it as it may, tannic acid, administered internally in proper doses, does stop the flow of blood from ruptured blood-

vessels, and is a hæmostatic that I wish to commend to the careful consideration of all, for by looking deeper into this subject we shall all be benefited and perhaps add one more drug to our list.

Perhaps this paper does not present many new points or ideas to the older members especially, but my object is to revive, create, or bring to the front more modern ideas than our present *materia medica* furnishes. Our chosen profession is on the steady march upward in nearly all its branches, and may I not be pardoned if I ask, have we not neglected our pharmacopœia and turned our attention too much to the modern bridge-work or the Herbst method of tooth-filling? Is there any one department in dentistry that is so much neglected and yet should be so thoroughly understood? Are we not falling behind just a little in this branch? Is there not a splendid opportunity for some of our eminent men to furnish us with an improved, concise, and modern *materia medica*?

NEW AND OLD GERMAN BRIDGE-WORK.

BY L. C. BRYAN, D.D.S., BASEL, SWITZERLAND.

DURING a recent visit to Germany, in which I visited a number of native, and resident American, dentists, I was much interested by a visit to Herr C. Rauhe, of Düsseldorf, on the Rhine. At the entrance of an elegant building on one of the principal streets of the city appears the sign "C. Rauhe, Zahntechnicker" (mechanical dentist). This means that the dentist has not gone through the regular stages of dental education, and passed the examination entitling him to the use of the word *Zahnarzt* (literally, tooth doctor), although his practice is identical with that of the *Zahnarzt*.

In the L of the house, on the first floor of which the dentist lives and has his practice, is the factory, which has developed in a few years from a dental laboratory, and from which he supplies a large part of the European dentists with all kinds of engine fixtures, from drills and burs to straight and right-angle hand-pieces, pneumatic hammers of various modifications, with direct, right-, and obtuse-angle blows, besides various other useful dental contrivances, largely of his own invention, or copies of American manufacture.

But what interested me the most during my visit, and that to which I desire to give publicity, is a novel construction of remova-

ble bridge-work, which he patented in May of 1879. This patent was taken out for a year, simply to record it as Mr. Rauhe's invention, and has never been renewed, and is now public property. During my visit, a patient called "to have her bridge tightened," and I had an opportunity of examining the construction of a full upper set without palate plate, the narrow rim of which fitted the ridge of the alveolus, and was secured in place by pins anchored with amalgam in three incisor and cuspid roots. The patient remarked that the set had done good service, and given satisfaction for several years. The pins extending out of the roots were originally split and spread apart to spring into place and to secure a firm hold in corresponding holes in the plate; but Mr. Rauhe now makes them solid, and inserts in the plate-holes gold spiral springs similar to the springs still largely used in Europe to retain ill-fitting double sets in the mouth. When, from wear, the bridge-work loosens, this spiral spring is narrowed in its diameter by pressing an excavator between it and the plate, or, with narrow-beaked pliers, bent inward.

The patient removes the bridge for cleaning, and replaces it with apparent ease. It is made of rubber, strengthened, if desired, with gold or other wire. It is as clean as any fixture which rests on roots, and struck me as very ingenious and practical. The pins are anchored in the roots, and no matter what the various angles of the inclination of the roots, the pins can all stand perfectly perpendicular and parallel above the end of the root, and so offer no difficulty to the insertion of the plate; while pins attached to a plate or bridge would have to stand at the various angles of the canals of the roots to which they are adjusted, thus precluding the use of a bridge with pivots in some cases. Another advantage of securing the pins in the root is the preservation of the root from decay, and from wear.

In anchoring the pin, the filling, either of amalgam or of gold, should entirely cover the end of the root, thus preserving it indefinitely from decay.

The principle of securing a bridge or bar of gold with teeth attached, by means of pins running into roots of teeth, is very old in Germany and France; and I send you herewith a bridge which is fifty years old, and was worn by the mother of an old lady patient of mine. The teeth, mounted by a village dentist, are probably of French make, and quite different from those now manufactured, and are without natural form or appearance, having a porcelain body with thin enamel surface, and three very short

pins on the borders of a groove at the back. In this groove a gold pin was laid, instead of a plate backing. The pins were bent over or against it, and soldered. The teeth so backed were soldered to a strip of gold which was in turn provided with pivots to secure it to the roots, cotton fibres or floss silk being wound round the pins to secure them in the roots. The four platina-backed incisors, with two pivots extending into the central incisor roots, were made eighteen years ago by my able Basel colleague, Dr. August Ritmann, and held firmly with their cotton fibre fastenings until all the remaining teeth had decayed, and were recently removed to make room for a full upper set.

SOME THOUGHTS ON CROWN- AND BRIDGE-WORK.¹

BY W. MITCHELL, D.D.S., LONDON, ENGLAND.

MR. PRESIDENT AND GENTLEMEN,—It is not so much the purpose of this paper to present anything new as it is to sift out and secure to us that which will prove of most value in every-day practice, and be a guide to those commencing in this branch of operative dentistry, whereby they may trace an outline of procedure that will insure a minimum of unsatisfactory experiences, which are nearly always associated with our earliest efforts, and secure a maximum of satisfactory operations, both to the patient and to the operator.

Crown-work, in the abstract, has passed through possibly more stages of evolution than any other of our methods of restoring facial contour, or defective articulating or masticating power; and the outcome of the vast amount of thought and experiment that has been expended upon it is manifest in the various and numerous systems at our selection. The result is for good, for it is hardly possible to conceive of a case where the tooth or root is solid, and the adjacent tissues in a warrantable condition, where some kind of crown may not be used with comfort and benefit to the patient. Roots may be rendered more healthy and more in harmony with adjacent structures, and need considering much less as a factor in peripheral irritation, when properly treated and crowned and restored to legitimate use than when left excised and in a ragged

¹ Read at the meeting of the American Dental Society of Europe, August, 1889.

condition, as a supposed support to a plate that frequently is a match for them in its filthy and unwholesome condition, a state of affairs brought about by wilful culpability by the addition of a necessarily ill-adapted artificial appliance to an already unsanitary and vitiated mouth.

To bridge-work, as frequently made, the foregoing remarks apply with particular emphasis; and while bridge-work in selected cases is undoubtedly a boon to the patient and a credit to the dentist, its common or indiscriminate use will undermine its real advantages and cause it to be looked upon with distrust and loathing, the first proposition promoted by lack of judgment and discretion, and the second by an ignoring or inability to recognize the fine mechanical manipulative requirements necessary to its perfect production and adjustment. Here I might mention, I deprecate most earnestly the indiscriminate excision of sound teeth, and drilling for anchorages to secure supposed supports for bars and footings; for in the one case very likely a perfectly sound tooth has been sacrificed, and in the other all the worst elements of an approximal cavity have been promoted, without any of the subsequent advantages of isolation, as is the case with a well-polished and self-cleansing surface of an ordinary filling. Already, in England and America, the charlatans who pose upon their capacity for "crown-, bar-, and bridge-work" are constructing animated sewers whose vitalities are being sapped by the indiscriminate insertion of these—in many cases—"fearfully- and wonderfully-made" appliances.

In my opinion, we have in bridge-work a valuable adjunct to our prosthetic *répertoire*, and one which, in capable and judicious hands, may be productive of much good; that the reverse of this is also true, it is scarcely necessary for me to suggest to my present audience.

I wish to lay special stress upon the necessity of carefully diagnosing a case where a piece of bridge- or bar-work is to be inserted, for, unless the diagnosis is a correct one, it necessarily follows the prognosis will be proportionately unfavorable. This applies more directly to bridge-work than to the adjustment of crowns, although with either, the requirements of the case as regards position, work to be done, adjacent and antagonizing teeth, all these points should be carefully noted, when a selection from the various methods should be made that is considered best suited to the case.

After some considerable experience in this class of operations, I have found the half cap, as still used by many, to be worse than no cap at all, affording, as it does, an exit for the cement or other retain-

ing mediums, and subsequently a receptacle for food and secretions that rapidly decompose, making, what should be a thing of beauty and service, a veritable whited or gilded sepulchre.

For molars and second bicuspsids the all-gold crown stands pre-eminently at the head of the list, possessing at once the greatest possible range in adaptability to more or less broken-down roots, restoration of masticating surface, cleanliness, and durability. It will thus be seen, if my claims are well founded, the gold-cap crown leaves little to be desired.

From an æsthetic stand-point it is inartistic where exposed to view; but if I had to choose between some of the miserable abortions called artificial dentures, superimposed upon roots reeking with morbid products, as we frequently see them, and alleged to be artistic, I should unhesitatingly prefer the inartistic and cleanly to the artistic and filthy.

But right here we are afforded an opportunity of combining utility with art, and securing a perfect result, for, by utilizing the principle of the gold-cap crown,—i.e., a cap with a porcelain crown or facing,—we have a combination that leaves little to be desired. The Logan crown has been utilized this way, and I believe with very satisfactory results. I believe a solid porcelain tooth makes a much more desirable crown than the plate or flat tooth, for they can be adjusted to the cap with the minimum of heat, and are much less liable to come to grief in ordinary use than are the flat or plate teeth; this being the case, about five years ago I devised a crown and attachment, using Ash's tube teeth, that admitted of a range of adaptability that has proved very satisfactory, their colors leaving little to be desired; and while only having used a limited number of these crowns, I am exceedingly well pleased with the results. Dr. Case, of Jackson, Mich., U. S., about two years ago spoke of nearly the same method as giving very good results, and within the past year in England the same method has found favor to some extent.

The Knapp system of solid gold crown merits notice from an artistic stand-point, and recommends itself to those who have the time and inclination to do what may just as easily be accomplished in one-fourth the time, and that, too, in many cases with less sacrifice of dental tissue.

The porcelain-faced crown, built up by the same process, I tried more than a year before Dr. Knapp's method was known, but I discarded it as a time-waster, and in preference use the method previously spoken of.

I have found that the deep collars or bands, which at first were supposed to be requisite to the success of an operation of this kind, to be quite unnecessary, a narrow one being better and much more compatible with the anatomical surroundings, and promises a greater success than experience has proved deep bands capable of; the reason for this is, there is less irritation produced while fitting them, and much less danger of the rupture of the dental ligament and the subsequent recession of the gum, thereby causing the band to be severely in evidence, and through its exposure, combined with gingival irritation, a nidus is afforded for deleterious products that become factors in defeating the objects of the operation.

I think in some cases the band may be entirely dispensed with to advantage; where the root is an indifferent one, it may readily be restored with amalgam and mounted with a crown; this in many cases will restore to usefulness a root that may long have been out of service. I have resorted to this method with advantage, restoring quite satisfactorily an otherwise faulty articulation and obviating the necessity of a plate.

The Bonwill crown offers in many cases facilities afforded by but few others, combining appearance, range of adaptability, and comparative ease of adjustment that goes far towards making it a desirable acquisition. In connection with crown-work, the Gates-Glidden drill has proved in no small manner to be a factor in our successes. I believe in a thorough preparation of the root, and the fitting of a suitable pin or pins to each case. I do not use a stereotyped pin, but frequently have to make one to suit a particular case, for by having a pin adapted to the size and contour of a root contributes in no small measure to the ultimate results of an operation. While it is well to be conversant with the various kinds of crowns, I think in practice we will necessarily confine ourselves to a very few, for it is much better to become experts in a few methods than to dabble in many, as the end desired is the same in all cases, and in proportion to the complexity of the operation, in proportion is it removed from the average operator. Simplicity of process, when producing satisfactory results, will be admitted on all hands the desideratum of the active practitioner. In our public utterances we are more likely to speak of our successes than we are to descant upon our failures, though who of us here assembled have not made them? And having made them, I hope we have turned them to account by noting and analyzing for the cause that produced the undesired results, and having done this, let us so shape our future work by formulating a definite line

of practice whereby we shall reduce to a minimum the element of failure, or modified success that must ever be present where indecision or absence of a definite plan accompany the earlier stages of an operation.

The famous aphorism, "be sure you are right, then go ahead," only needs a slight modification to be quite applicable to our profession,—be sure in your diagnosis, then proceed with the treatment. I cannot help but think the perfection or elaboration to which the mechanical part of bridge-work has arrived has to quite an extent been at the expense of its utility, and by mentally deficient enthusiasts its greatest benefits have thereby been debased.

An utter ignoring of the physiological principles and processes that form the substratum of all dental operations seems to me to be more the rule than the exception in this class of operations, and by the—in many cases—tendency towards mechanical novelty. Physical requirements have been forced into the background in a manner that does not redound to the credit of the members of a profession whose foundations are supposed to be built upon the bed-rocks of anatomy, histology, physiology, and chemistry. This belief is more thoroughly enforced upon me when I see in our journals cuts and details of wonderful appliances supported upon foundations of the flimsiest description, showing their advocates to be entirely destitute of a knowledge of the elementary principles of mechanics, which inferentially, if not conclusively, bespeaks a poverty of general fundamental detail that in almost any calling should debar their utterances from gaining publicity, to the detriment and misleading of the younger members of our profession.

There are very few superfluities in nature; therefore we must conclude originally our dental complement was perfect for the purpose intended; that we can and do succeed fairly well in living with imperfect dentures is no argument in favor of superimposing an entire set of teeth upon three or four faulty roots, and when men get up in societies and state that "bridge-work can be successfully inserted upon a few loose roots that are in an advanced state of pyorrhœa alveolaris, thereby rendering them firm and solid," it is time for the profession to call a halt upon such fallacies, and inquire if some asylum has not discharged one of its late patients as "incurable."

Absurd ideas and statements always have, and probably always will have, advocates; but I hope there is sufficient mental ballast and moral back-bone in the profession to negative and overcome such fictional emanations, and instead of allowing them to pass

current by kindly ignoring them, denounce them in an unmistakable manner, thereby locating a rock and preventing the stranding of some professional brother who may be unwittingly drifting within its treacherous influence.

The cases that present themselves for our consideration are of such a varied nature that special description would avail but little here, each case necessarily having to stand upon its own merits; but with a clear conception of the anatomical, physiological, functional, and mechanical aspects of the case, and a moral motive force impelling towards the greatest good to our patients, there can be but one outcome to our efforts.

I can only speak positively of fixed bridge-work, not having had any personal experience with the movable kind. The reason I have not made movable work is owing to the few cases where it is possible to secure anchorages or abutments upon parallel lines; where these are not naturally so, it is an operation involving a great deal of time and patience for their artificial production, this, combined with the disadvantages incidental to the enforced use of soft gold or platina in the construction of the work that must necessarily have a certain amount of play to insure of its removal, is in my mind an argument against its general adoption. There are also other points upon which its advisability may be questioned that will present themselves upon a little study of the subject.

Fixed bridge-work has advantages over plate-work that cannot be denied, but, as I have before stated, it is a full appreciation of the requirements of the case that conduces to its success; it can be so constructed as to be as cleanly and as comfortable as the natural teeth; and if, as is often necessary, the articulation is modified to suit the individual case, a source of comfort and utility is afforded the patient impossible by any other means.

The various means for the retention of crowns and bridge-work are commensurate with the work itself. Amalgam, gutta-percha, and cement may all be used to advantage; an ethereal solution of sulphur may also be used. I prefer for both crowns and bridge-work a fine-grained, slow-setting phosphatic cement.

Never use oxychloride of zinc for setting crowns, the chemical action is so rapid and pronounced that the destruction of the adjacent soft tissues is sure to follow, accompanied with much pain.

In conclusion, if your work is based upon correct principles, the work mentioned in this paper will prove a remunerative as well as a successful and interesting portion of your practice.

Reports of Society Meetings.

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting, Tuesday evening, April 15, 1890, in the New York Academy of Medicine, No. 12 West Thirty-first Street.

The President, Dr. J. Morgan Howe, in the chair.

INCIDENTS OF OFFICE PRACTICE AND CASUAL COMMUNICATION.

Dr. S. G. Perry.—I wish to exhibit a reamer, to be held between the thumb and fingers, for the enlargement of openings in root-canals, more particularly in the back teeth. The principal peculiarity about it is that the shaft is made considerably smaller than those heretofore used. The smaller the diameter of the instrument the greater the number of revolutions it will make with a given movement of the thumb and finger, and the small diameter of the shaft of the instrument insures safety against undue strain upon the tooth and the reamer, so that there is no danger of breaking it. They can be tempered rather soft, as all steel instruments for this purpose should be, for if they have a hard temper they would break easily. These are very much shorter than the instruments of a similar pattern that have been used heretofore. When they are made short they can be carried far back even to the posterior surfaces of the wisdom teeth. They are rotated with the thumb and finger, or, being made of the size of the bur wire, they can be used in the back-action of the engine. It is very satisfactory to me to use an instrument of that sort between the thumb and fingers, because I can feel and know what I am doing, which one cannot always do when he uses the tremendous and uncertain force of the engine. They were made for me by Mr. Hodge. I have since had a quantity of them made, by Lukens and Whittington, of greater lengths, to be used for the canals of any of the teeth. The shortest ones for the back teeth are three-quarters of an inch, and the longest ones for the other teeth are three and one-half inches. The long ones can also be used in the engine, if desired, as the shaft is of the size of the bur wire.

They are intended, however, more particularly for use between

the thumb and finger, and are as nearly as possible a "safety-reamer." The flanges are not deeply cut, and they "bite" very little, and are therefore not liable to break.

Dr. Geo. S. Allan.—Mr. President, I do not know whether it is necessary for me to call up from the table the letters of Drs. Heitzmann, Bödecker, and Abbott, which were read at the last meeting of this society, in order to reply to them. If it is not, I would like to have the privilege of making a short reply.

The President.—Dr. Allan is in order.

Dr. Allan.—It is both proper and right, having introduced the original preamble and resolution, to reply to these communications, and so I beg a little of your time in which to do so.

Dr. Bödecker's letter merits only a passing notice. First, as to the intimation that the action of the Society can only lead to unpleasantness and harm to itself, I fail to see wherein the danger lies. If any such trouble does follow, the Society will in no way be to blame for it. They only did that which seemed reasonable and right, and did it in the most courteous and gentlemanly way. If offence be taken, the fault will be elsewhere than with the Society.

It is an error to suppose the matter a personal one between Dr. Heitzmann and myself. The reasons for this I plainly pointed out in the remarks I made at the time I submitted the resolutions. That the Society agreed fully with me was made very evident by their adoption of those resolutions by a unanimous vote. It is true that I have declined to accept Dr. Heitzmann as an autocrat in matters biological, or his wild theories unsupported by facts or demonstrations. His followers, I am well aware, are willing to waive these slight formalities, but I am not, and I am happy to say I find myself in a large and very select company.

As to the letter signed by all three of these gentlemen, it is certainly a remarkable production, and I propose to show wherein this statement is true, though I doubt greatly whether it is at all necessary. The letter speaks for itself.

My amazement was great when I first read it, and for a moment or so I thought I must have been dreaming these many years, and that most unwillingly I had been maligning my neighbors. Then the truth dawned upon me, and I said, Can it be possible that they hope by so palpable an evasion as this to shut off inquiry and criticism? Either such is the truth, or it is a clear back-down.

Now, let me acknowledge in the beginning that there is just one little grain of truth in the ignorance they impute to me. It is very true, but very pardonable. I confess, then, that for the moment

when writing the words "protoplasmic reticulum," I had forgotten that the gentlemen in their several writings had used the words "living matter," and, furthermore, that Dr. Heitzmann claimed the great discovery of a fibrous reticulum existing in protoplasm, and had asserted that this reticulum was the living matter of protoplasm, and that the semifluid mass in which the reticulum was embedded was dead matter.

Please note the following taken from Dr. Bödecker's writings; it seems to relate to the point at issue:

"In 1878, Dr. C. Heitzmann (Sitzungsberichte der Kaiserl. Akad. in Wien) first discovered the minute structure of protoplasm and that of other tissues of the animal body, mainly epithelium and connective tissue. This author describes the net-like structure of the protoplasm thus: 'The nucleolus is connected with the wall of the nucleus, and this again with the granules of the protoplasm, by very fine threads, which are to be regarded as the living matter of the protoplasm, while the fluid contained within these meshes of living matter does not possess the property of life.' "

So you see that my ignorance of histological nomenclature, or the English language,—or both,—consisted in my not following literally their nomenclature and English; though, sad to relate, every other authority of note and power in histological science, the world over, uses the expressions synonymously.

Protoplasm and living matter to all others mean one and the same thing. Only with Dr. Heitzmann and his few followers have they been divorced and the one made to play a subordinate part to the other. You will all thank me, I know, for showing you my grievous mistake, and so preventing you from making yourselves liable to the same charge of ignorance. You must pay no attention to such authorities as Huxley, Spencer, Klein, Stricker, and a host of others, but stick strictly to the text as Dr. Heitzmann laid it down.

In further elucidation of my position, and to aid others in grasping the unique one held by the three gentlemen referred to, I will make a few quotations from recognized authorities. First,—though it seems almost a waste of time,—I will quote in reference to the synonymous nature of the terms "protoplasmic reticulum" and "living matter."

In the "Encyclopædia Britannica," last edition, under the heading "Protoplasm," we find as follows:

"In most of the biological articles already before the reader, whether concerned with general questions, as Biology, Anatomy, Botany, Embryology, Evolution, Histology, Morphology, Physi-

ology, etc., or even with special groups of living beings, as Animal Kingdom, Foraminifera, Fungus, Protozoa, etc., special reference has been made to *protoplasm* as the *living matter* from which," etc. A comprehensive summary, which means that the leaders in all these various branches of knowledge use the terms as I did, and that Heitzmann's great discovery was unknown to them.

Schafer, in his "Elements of Histology," last edition, in speaking of cells, says, "These are minute portions of living substance or protoplasm."

Sedgwick and Wilson, in their treatise on biology, devote a chapter to "Living Matter or Protoplasm." It is unnecessary for me to add to this list. Practically, I have the whole literature of the subject on my side. And now as to the reticulum itself.

Klein, who almost alone of the authorities of the day connects Professor Heitzmann's name with the reticulum, makes but a brief allusion to it, and, strange to say, makes no reference to the reticulum as being the living matter of protoplasm, a most unpardonable omission, I must confess; but Klein's sins of omission are exceeded by his sins of commission, for a little further on—referring to the nucleus—he says, "This again is composed of a stroma or nucleus net-work and the interstitial substance." If this means anything it means that Klein believes the reticulum to be dead matter. Possibly Klein never knew what Heitzmann had discovered, or, what is more probable, he attached no importance to a discovery that had no better foundation for its acceptance than a dogmatic assertion of its truth. That sort of coin, as a rule, does not pass with scientists of repute.

Now, it may be a proof of ignorance on my part, but so far I have not been able to find more than one or two authorities who refer to Professor Heitzmann in any way as having made this discovery. I am willing to grant that Klein does not stand wholly alone. But most of the standard writers on the subject do refer to a reticulum that may be found in protoplasm, more easily, as a rule, in vegetable than in animal protoplasm; but nowhere else is it referred to as the essential living part of protoplasm. Dr. Heitzmann can say, in all truth, not only that he discovered this great fact, but that he stands to-day as the sole and only believer in it in this country. The exceptions are too rare to rob him of his glory.

Sedgwick and Wilson spoke of the reticulum as being difficult to discover, and as being visible only under the highest powers and with the most careful illumination. Schafer, in his "Essentials of Histology," refers to it only slightly and as *sometimes* being

present. Wishing for further light, I wrote to Dr. Andrews to ask Professor Sedgwick to give me the latest German views on the subject, and the professor kindly sends me the following letter:

"I send you an extract from a poor translation (by one of my pupils) of a paper by Bütschli, in which incidentally some light is given on the structure of protoplasm by him, one of our ablest and foremost men of modern biology. I also find that Berthold, in his book on protoplasm (1886), comes to a similar view: thus (page 64), 'From the actual results of studies of the finer structure of the protoplasm and their undisputed confirmation . . . and, finally, from general theoretical considerations, it appears that the fundamental substance of the protoplasm and the different things which it contains . . . are an exceedingly complicated mixture, and that the protoplasmic mass in its entirety is to be considered as an emulsion of a more or less fluid consistency.'

"He therefore regards protoplasm as an emulsion, as Bütschli does. The finer, clearer, transparent part he does not venture to discuss at length. Heitzmann thinks this to contain a reticulum. So do the botanists Strasburger and Schmitz.

"Flemming admits a thready structure in the clearest protoplasm; but while granting that the thread *may* make a net-work, strongly doubts it.

"Berthold agrees with Flemming, and both are capital men. Both suspect also that the threads seen are post-mortem appearances.

"So far as I can judge the truth is about this: thready or net-like differentiations are to be seen; but no live man can say whether they are natural or post-mortem.

"Bütschli seems to regard them as gelatinous and (apparently) as alive. Nobody knows whether they are or not, at least I don't."

In conclusion, let me add that I feel certain the day is not far distant when the gentlemen whom I have referred to will feel ashamed of their action. In their weak efforts to silence me they have done more to discredit their own views with thinking men than, unsupported, I could have done in years, and I thank them heartily for the favor. Does any one doubt for a moment that if they had specimens such as they profess to have, they would not eagerly have embraced the grand opportunity offered them by this society to obtain its endorsement, and the endorsement of such a committee of experts as the preamble and resolutions called for? They were asked to co-operate with this society in the formation of a committee that would be satisfactory to them, and their reply is the claim that they themselves are the only experts available. I did not think they would take such a ridiculous position. If they are satisfied with it, I have every reason to be with my own. Evidently, and for some good reasons, they are very averse to showing their specimens.

(To be continued.)

THE AMERICAN DENTAL SOCIETY OF EUROPE.—
SEVENTEENTH ANNUAL MEETING, PARIS, AUGUST
6 AND 7, 1889.

(Continued from page 245.)

Dr. Mitchell.—Mr. President, through some mistake Dr. Haskell's paper was left behind, and as I know the important features of it, I will do my best to present them to you. Dr. Haskell's paper was principally historical in connection with continuous-gum work. He spoke of Dr. Allen's first introduction of continuous-gum work in Boston, a little over thirty years ago. Dr. Allen was very enthusiastic in regard to this work, according to the light of the profession at that time, and I may say it has extended down quite to the present period. Dr. Allen's work originally consisted, not of making the continuous gum as we have it now, but of soldering on the teeth, not quite so effectually as at present, and sometimes the body was carried around the pins of the teeth and down over the footings of the backing to make it comfortable to the tongue; but beyond that there was no attempt to make the plate and produce the rugæ as now practised. There were a great many dentists in Boston who adopted this with the usual degree of enthusiasm incidental to new converts. As there was much to be learned, they soon found it was not quite so easily manipulated as they had supposed. Dr. Haskell made several changes in the character of the work, and he assisted very materially in improving the material of the gum body. He found that this process uncombined was a very good thing, but does not believe in it when connected with vulcanite. Dr. Haskell also introduced what he terms a "doubler." I was not aware of his use of this. I adopted the same method and found it an exceedingly good thing. This is produced by waxing up to the required thickness, making model and dies as required, and striking up a semicircular piece of platinum and soldering it to the back end of the plate and flowing the body underneath that. It is well known that in continuous gum we have a work which is only limited in its artistic capacity by that of the operator, and it is one that you cannot delegate to another; every one should do the labor himself. Another point should be mentioned here, and which has been emphasized by Dr. Haskell again and again, and that is, do not be afraid to carry a

plate too high where the cuspids have been extracted to secure proper muscular action at these points and relieve the depression, which is always present at the side of the nose in persons wearing an artificial case. The appreciative capacity for anatomical harmony is lacking in the ordinary workman, and the dentist cannot relegate this work to another.

A great many objections have been raised in regard to the weight of the work; but weight in a lower plate is a great advantage, and, in the majority of cases, it is not a serious matter if the plate fits. As soon as the plate breaks loose from atmospheric pressure the weight is felt. If there is a perfect adaptation, a thorough knowledge of the requirements of the case, and a modification of the model as the occasion may require, a perfect sense of comfort is insured to the patient. The general plan of masticating surfaces can certainly be secured in a manner superior, or equal, to that of any other method, from the fact that plain or single teeth are used.

You can depress a tooth, elevate, lengthen, or shorten; in fact, it is capable of any modification. In regard to the manipulation in detail, this is familiar to all of you, and it is therefore unnecessary to describe it at length.

There is one thing more I wish to mention. As there seems to be some hesitation in selecting the best means of baking plates, a certain number of furnaces have been introduced. Dr. Verrier's I have used, and I must say it has not been very successful; indeed, he himself has not met with the success he could have wished. The heat must be brought gradually, steadily, but surely directly to the fusing point, and to be allowed to remain there so as to permit the particles to coalesce thoroughly, for just in proportion as you get a rapid fluctuation of heat is unequal expansion and contraction promoted, producing crazing, which is one of the most marked imperfections of the work. I would strongly recommend a coke furnace. Dr. Haskell has adapted the coke furnace to the requirements of the ordinary laboratory by surrounding it with asbestos cloth, to prevent radiation.

In long articulations, where the teeth are far removed from the maxillary ridge, you get a leverage, and in prognathous cases there is a tendency of the teeth to fall out of position during baking. This is more liable to occur where the heat rises and falls rapidly, so you will see that the great desideratum is to have a furnace where the heat can be controlled perfectly. Dr. Land, of Detroit, Mich., U. S., has produced a gas furnace for which much is

claimed, but of its practical workings I have had no experience. I feel quite sure that continuous gum work is a branch of prosthetic dentistry that every one with a little patience and a little practice can manipulate successfully.

The following reply to the telegram sent to Saratoga, United States, was received:

"PATTON, SECRETARY A. D. S. OF EUROPE, PARIS.

"The American Dental Association reciprocate kindly greetings of the American Dental Society of Europe.

"CUSHING, *Secretary.*"

Second Day.—Afternoon Session.

Dr. Miller's histological studies by aid of the lantern.

DR. ELLIOTT ON ANTIFEBRIN.

GENTLEMEN,—At the time I took up this subject, six months ago, it was to me quite new; my attention was called to it by a physician who was using it very largely in neuralgia. In my opinion we have no remedy which approaches in value this agent. I have used it in fifty cases, and in forty-five of them have been successful,—that is, in reducing within a few hours the pain of advanced periodontitis.

I cannot give you accurate details, because I could not carry the record as far as I wished, but, in my experience, it is superior to the local application of either aconite or iodine.

I always confine my treatment to two doses of ten grains each, and the pain is almost immediately relieved, and there are no ill effects from it as from the use of opiates. I took up the use of another substance, phenacetin, a medicine of light character, but the antifebrin has been the most successful.

I would like to call your attention to some experiments I have made with amalgams. The main object of these *experiments* was to determine what part each metal took, which was the expanding and which was the contracting metal, and what proportion of these metals was necessary to get the best results. It has been stated in Dr. Flagg's book that silver was the expanding agent, while tin contracted; his views have, in a measure, been confirmed by Dr. Kirby, of Bedford, England. Dr. Flagg, as I remember, states it merely as a fact and does not give us his proofs, while Dr. Kirby seems to have demonstrated it by frequently measuring with a micrometer a bar of silver amalgam and also by the breaking of glass tubes; but, of course, tests of this kind cannot be considered

to be very accurate from their very nature. I have made a number of experiments by the specific gravity test, which, as you know, is extremely delicate, so much so that I have found it quite unnecessary to consider the question of equable heat. In my earlier tests I kept the amalgam under investigation in water, heated, and kept at a temperature of 100° F., but I found that in a mass, say of ten grains, the difference in bulk between 60° and 100° was only some three milligrammes, or as 3 to 10,000. Consequently I made no further effort to keep the water warm.

Now, in regard to silver. I took masses of from five to ten grammes, weighed them in water, sometimes every few hours, at other times only once or twice a day, but the result was always the same contraction in nearly every case; now, whether the copper had anything to do with this or not I do not know. I used sterling silver, which contains eight per cent. of copper. You will see by the table the amount of contraction.

TABLE.
Standard Silver Amalgam.

1889. JUNE	STANDARD SILVER.		
	Medium grain.	Coarse grain.	Fine grain.
18	5.966	6.598	5.887½
19	5.989	6.616	5.861½
20	5.998	6.619	5.885
21	5.996	6.622	5.885½
22	5.998	6.624	5.886
24	5.999½	6.629	5.886

Now, in regard to the combination of silver with other metals, I have experimented with tin, zinc, bismuth, aluminium, etc. The tables of the first three are before you, as per example.

Silver and Tin.

1889. JUNE	No. 1. STANDARD SILVER AND 5 PER CENT. TIN.	No. 2. STANDARD SILVER AND 10 PER CENT. TIN.	No. 3. STANDARD SILVER AND 15 PER CENT. TIN.	No. 4. STANDARD SILVER AND 20 PER CENT. TIN.
18	4.978	4.420	3.288	2.980
14	5.044	4.442	3.279½	3.036
15	5.068	4.461	3.418	3.055
17	5.082	4.465	3.456	3.080
18	5.091	4.470½	3.466	3.095
19	5.098½	4.470	3.469½	3.096½

Silver and Zinc.

1889. JUNE	No. 1. STANDARD SILVER AND 5 PER CENT. ZINC.	No. 2. STANDARD SILVER AND 10 PER CENT. ZINC.	No. 3. STANDARD SILVER AND 15 PER CENT. ZINC.	No. 4. STANDARD SILVER AND 20 PER CENT. ZINC.
14	6.722	5.410	4.181	Too friable to manipulate.
15	6.748	5.478	4.210	
17	6.762	5.469	4.210	
18	6.764	5.475	4.208	
19	6.764	5.477	4.208	
20	6.767	5.477	4.210	

Silver and Bismuth.

1889. JUNE	No. 1. STANDARD SILVER AND 5 PER CENT. BISMUTH.	No. 2. STANDARD SILVER AND 10 PER CENT. BISMUTH.	No. 3. STANDARD SILVER AND 15 PER CENT. BISMUTH.	No. 4. STANDARD SILVER AND 20 PER CENT. BISMUTH.
11	4.496			
12	4.560	5.830	5.582	
18	4.570½	5.880½	5.708½	5.550
14	4.579	5.896½	5.748	5.688
15	4.588	5.909	5.748½	5.671
17	4.601½	5.927	5.774	5.642

My experiments with aluminium are quite negative. When combined with silver its power of amalgamation is infused in direct proportion to its amount, and can only be used, practically, when it has less than five per cent. of the alloy. No good property has been developed to encourage further investigation. It does not follow that, because two metal alloys contract, the addition of a third contracting metal will increase that contraction. We cannot tell by any process of reasoning what the result will be. In conclusion, let me say that while my experiments with amalgam may not be directly useful, they give us some little insight into the complex problem before us.

The great difficulty in making these experiments—or rather of getting some practical good from them—is the uncertain nature of the materials made use of. We are never sure of getting the same alloy twice, owing to the almost impossibility of getting pure metals and the effect on the material by different modes of treatment. I have not found that the physical condition of the alloy was important in relation to the question of contraction. Experiments with coarse, medium, and fine grains did not develop any facts of interest;

while the fine was pleasanter to work and would probably prove the most useful in practice, the coarse was not inferior.

Allow me to show you a new reducing and regulating stop-valve I have designed and made for use with the oxyhydrogen blow-pipe and lantern work; also a sand-paper disk-holder, new instruments, and appliances; hand-piece, right-angle; mechanical mallet, straight and right-angle; special burs, amalgam instruments, etc. I take this opportunity of exhibiting them, for, having retired from practice, it is not likely that I will again have the pleasure of meeting you.

Those who were present at our last meeting will remember that Dr. Young brought forward some gutta-percha impressions, and they were certainly far superior to anything I have ever seen. I have failed to get the same results with the same material. Dr. Young even was not successful in my own mouth. We failed to get the material in England, and Dr. Jenkins was good enough to send it to me from Germany. It has one objection, however, although it is my favorite material, and that is the length of time it takes to harden. I tried some experiments to get at certain facts, for we are too easily led to follow the experience of others instead of trying for ourselves. In regard to Stent's and other preparations, there is a temperature at which they work best; if you go higher you do not get good results; if you use red gutta-percha, it is too low.

I also have some specimens of gutta-percha stoppings which have no particular value, but simply are shown as an evidence of how easy it is for you to make your own gutta-percha; it costs about two dollars a pound instead of five dollars an ounce; it is made, in spite of Dr. Flagg's elaborate method, of gutta-percha and oxide of zinc, and you roll in from three to six per cent.

I also brought a pivot with which I have had ten years' experience, and it has proved itself good. I use a wedge pin to secure it; this specimen which I have here will explain its advantages in certain cases.

Dr. Mitchell.—In regard to your amalgam test, have you considered barometric pressure as having any bearing upon such delicate test?

Dr. Elliott.—You may not know that the test is an exceedingly delicate one; if you heat a tooth ten degrees, Fahrenheit, of course, it would be quite different. Actual changes of temperature can be quite easily discarded from your calculations. Some say, Why don't you make the test in water, which can be kept at any temperature.

I have done so, and it made a difference of about three milligrammes.

Dr. Mitchell.—Speaking of the antifebrin, I remember you telling me of its benefits. I undertook a series of experiments, and I can thoroughly endorse its good qualities. I have a remedy, but I do not think it gives the same results as the antifebrin, and that is quinine. I use it a great deal in my practice here, in doses from four to ten grains, given at night; two grains at intervals of an hour, until the desired dose is administered; if there is any slight disturbance, quinism being produced, I find that the action of quinine is, if anything, more accurate than the antifebrin. There are many persons who can take the antifebrin who cannot take quinine.

Dr. Elliott.—I hold a piece of metal manufactured by a patient of mine, really an improved brass, made of copper and zinc with a very small proportion of iron. I have made a plate, which has been worn by my secretary for some time, and it answers very well as far as I have observed. It is exceedingly thin, but it has held its position as a suction plate. Of course, it is only intended for very common and cheap work; the copper being cheap, it can be soldered with silver solder.

Dr. Kelsey.—Can any one tell us what is the character of the new metal which resembles platina? Is it not composed of nickel?

Dr. Elliott.—Dental alloy, I think it is, and it is composed of silver and platinum.

Dr. Mitchell.—Would not the nickel, which has a stiffness about it not possessed by any alloy, prove a great disadvantage to its working qualities? Dental alloy is a combination of silver and platinum. Before reducing it quite to the required thickness, the silver is eaten off the surface by acid, and the platinum in the subsequent rolling is diffused entirely over the surface. I think the combination of silver and nickel would make a very safe preparation for working, owing to its less liability to tarnish and the sulphides forming less readily upon it.

Dr. Bonwill.—If any one takes the INTERNATIONAL DENTAL JOURNAL, you will see in the January and February numbers the method of retracting, and at the same time keeping teeth in position. It is a double band, which you can see is fastened round the teeth, working one inside and out of the other. The pressure is produced simply by a piece of rubber tubing, thus enlarging the arch and at the same time drawing those teeth in or out of position.

Now, I have another little device, which is used to reduce to any infinitesimal size nerve broaches, which we all find so necessary.

It is nothing more than taking a soft steel or rubber packing and placing between them emery disks, and by placing the small broach in between this and revolving it, it cuts it down to any size desired. If you try it, you will find it one of the most useful things you ever had in your office, and the means of removing the pulp from the finest canals. It has given me more satisfaction than anything else I have in my office.

Dr. Du Bouchet.—I have not prepared any paper on the following subject, but the other day I came across these models, and I thought it would be of some interest to the Society. I regret I cannot show you the living subject. A man, fifty years of age, came to me; the jaws were flattened in the middle, and there was a contraction which increased more and more every day, and when he came to me the mouth was almost closed. I could not take an impression in that condition, and in order to expand the jaw it was necessary to have an impression. I had him come a day or two later, and instructed him how to use his fingers to enlarge somewhat the space. He tried this for a week, and all the tissues yielded. I was then able to introduce half an impression-cup in the mouth, but it was not the right size. I took a piece of wax and pressed it with my hand and secured a rough impression. When he came the next time I took an impression regularly in Stent's composition, and, on examination, found the portions were fairly even on each side. When he came again, I secured an impression of one side, it being impossible to use an impression-cup for the entire jaw. Afterwards I made an impression of the other side. I took my model, separated it from the first impression, and introduced the model of the second impression; then I poured plaster into the last impression and obtained this. In a few days I had the man call again, and with this model I instructed him in working the apparatus. He was not a very intelligent man. At the end of a month's time this is what I obtained. I separated a little more and I again took an impression. I enlarged the jaw and could get the impression-cup into it, and made him a fixture such as I here present.

Dr. Evans.—I will exhibit to you a few specimens of celluloid. There has been a question as to the durability of this material. It is, of course, not as durable as hard rubber, nor as metal, but it affords a beauty of results superior to any of them; consequently, if properly manipulated, its durability will be from eight to fifteen years. I have tested it with a great deal of satisfaction, and have found, in an examination as to the cause of failure, that it was owing largely to the finishing of the celluloid after it was baked.

Now, if it is prepared against tin, which the microscope shows by section, it produces a hardened surface; consequently, if the work is prepared in wax first and then encased in tin models, you get a result which will be lasting for a long time. Here is a case mounted and prepared for the vulcanizer. Here is a piece after it has left the vulcanizer, in which it shows that the case is really finished, and by putting it on a brush-wheel you have it polished and ready for the mouth; it will be found very much easier to work it in wax. I prefer, of course, to put it on metal and attach the teeth to the metal by celluloid. Warping will not occur if it is thoroughly seasoned, and it, therefore, should be allowed to bake at night and to stand over till next day. I prefer a dry heat produced by steam. Here is a case which has been made several years ago, and would show warping if anything would, and here is one from the same model, the only difference is in the color and carving. There is a little piece of zylonite which shows different results.

Dr. Elliott.—Now, gentlemen, we will ask our guests to retire while we go on with the business of the society.

UNION MEETING OF THE CONNECTICUT VALLEY
DENTAL SOCIETY, THE NEW ENGLAND DENTAL
SOCIETY, AND THE CONNECTICUT STATE DENTAL
ASSOCIATION, AT SPRINGFIELD, MASS., OCTOBER
23, 24, AND 25, 1889.¹

(Continued from page 809.)

DISCUSSION OF DR. ROBERTS'S PAPER.

Dr. Parmele.—I would like to ask what is an overdose, and what are the symptoms of an overdose?

Dr. Roberts.—According to my knowledge it is not necessary to be very careful, but a dose is from three to ten grains. In my illustration, I placed three grains in a glass of water, the patient did not get the benefit of the three grains, but perhaps two-thirds of it,—it stopped the hemorrhage. I had a case a week ago; the patient bled extensively all night; she had neglected her mouth, the tissues being in a diseased condition; the next morning I sent

¹ Reported for the INTERNATIONAL DENTAL JOURNAL by Geo. A. Maxfield D.D.S., Holyoke, Mass.

her a three-grain dose, and saw her husband at night, when he told me the hemorrhage had all stopped.

Dr. Stowell.—Does tannic acid have any local effect?

Dr. Roberts.—If I had a case where I wanted to use it locally, I should perhaps sprinkle it on. I used to have the patient take it with a spoon and pass it into the mouth.

Dr. Bartholomew.—As I understand it, tannic acid, when it has passed into the system, undergoes a change and is converted into gallic acid.

Dr. W. H. Atkinson.—There has not been enough observations made to enable us to thoroughly understand this subject. It is stated that this change does take place. I have had some cases where, when the gallic acid was administered directly, I had better success than when tannic acid was introduced. The danger is not in the circulation, but infiltration of the parts when it gets into the smaller vessels. The history of the case here cited, as I have heard it, is only observation without application, to determine the relation of the quantity given, the manner of administration, and the depleted condition of the patient, and whether the latter condition would seem to indicate that the hemorrhage was about to subside at the time the administration was made. The writer said it came from gum tissue; if this was the case I do not see why a local application would not answer, and be a very reasonable and successful way of treating it. In such a case I prefer to use the persulphate of iron. If it comes from the apex of the socket, it is caused by the mouth of the blood-vessels being caught in the socket and are thus unable to close on themselves. When this is the case the best thing to do is to take a burr and burr the end of the socket a little larger so as to allow the sides of the open-mouthed vessels to be free from the walls; they will then contract and the hemorrhage cease. I think it is a very good plan to continue giving tannic acid for several days after you have succeeded in arresting the hemorrhage, for there is a liability of its recurring when the slough comes off.

Dr. Bartholomew.—Would you prefer to give gallic instead of tannic acid?

Dr. Atkinson.—That would be a question. If I were so impressed at the time that that was the best thing to do I would do it. I have not enough science in my facts to distribute it around.

Dr. Bartholomew.—Tannic acid is a very old application, yet in many instances has failed to perform the work desired. Tannic acid, applied to a wound outside of the mouth to keep it from bleed-

ing, is one of the best of antiseptic applications. Internally, I would give gallic acid directly, and you can administer that with perfect safety; take a teaspoonful in a glass of water and it will inevitably stop the hemorrhage. There is not a case on record that I know of where gallic acid has been administered but what it has performed the work. It coagulates the albumen, that when the action of the acid has reached the wound the thin blood has stopped. In ninety-nine cases in a hundred you need not use anything else but tannic acid if the bleeding be on the surface, but if you will administer the gallic acid, you will get an effect where tannic acid will fail entirely.

Dr. Maxfield.—Does the gallic acid cause a thickening of the blood throughout the body?

Dr. Bartholomew.—Yes, but it also slows down the action of the heart. It affects the nerves of the heart not injuriously and need not cause any alarm.

Dr. Maxfield.—Are you not running a good deal of risk by thickening of the blood?

Dr. Bartholomew.—I do not mean to say that the circulation of the whole system is coagulated, but the moment it strikes the atmosphere you get your thickening, and the force of the blood current is not so strong.

Dr. Maxfield.—I do not think we have enough data to support the assertions that have been made in regard to the action of gallic acid. What we want in these cases is an agent that will effect the vaso-motor nerves and cause them to contract on the blood-vessels. The agent that will best accomplish this is ergot, and I would advise its administration in troublesome cases of hemorrhage.

Subject passed.

Friday Morning Clinic.

President Bartholomew.—I have arranged with Dr. Keefe, a practising physician of this city, to administer ether to the patient whom Dr. Curtis will operate upon this morning. Dr. Keefe has a method peculiar to himself. By his method the patient becomes etherized in a very short time and with very little trouble, and I know you will all be greatly interested in this method. I would like to have Dr. Maxfield keep the time and report as soon as the patient is ready for the operation.

Dr. D. E. Keefe.—Gentlemen, as far as I know, this method is original with myself, a full description of it was published in the *New York Medical Journal* of November 20, 1886, page 573. The

great trouble in administering ether is at the beginning to give sufficient air with the ether so as not to strangle the patient, and then as soon as the patient gets accustomed to the ether to give only the ether vapor. I have overcome these objections. I simply use a large towel, folding it first four times lengthwise and placing a piece of paper the full length between the outside folds, then I roll it up into a cylinder, the size to be governed by the face of the patient; you want it large enough to cover the face, and not too large. Now we have a cylinder open at both ends, full size. I then saturate the lower part of the cylinder, that comes against the face, with the ether, then apply it to the face, and as the other end is wide open, the patient gets a great deal of air and also a great deal of ether vapor. A few breaths are sufficient for the patient to become accustomed to the ether. I then close the outer end of the cylinder, by bringing the sides together and holding them with my hand. The patient now only gets the ether vapor, and is very soon wholly etherized, and without any struggling or coughing. Of course, before so many, the patient is somewhat nervous, and the time may be a little longer than it would be if I were administering it in an office, where everything was quiet. The average time generally taken to bring the patient under ether by this method is only two and one-half minutes, and I only use one and seven-eighths ounces of ether. You can see what a small quantity of ether it takes. Now, chloroform I consider just as safe as any anæsthetic if you only know how to use it. You must remember it is very powerful. It holds the same relation to ether that a powerful locomotive does to the small toy engine, and to use it one should thoroughly understand this, and, realizing this, they will be able to have it wholly under their control. In administering chloroform, the average time is two and forty-three-sixtieths minutes, and the quantity three-eighths of an ounce; compare it with the amount of ether required, you see it takes only one-fifth as much. The best thing for dentists to use is, I think, what is called the one, two, three mixture; or the R. C. E. mixture, that is, one part alcohol, two parts chloroform, and three parts ether. With this mixture it takes only two and forty-sixtieths minutes and only about six-eighths of an ounce. I will now administer the ether to this patient and you can judge for yourself.

Dr. Maxfield.—I have taken the time and it has taken just three minutes and three-quarters.

Dr. G. L. Curtis, Syracuse, N. Y., then performed the operation, which consisted in removing the redundant condition of the mucous

membrane of the upper lip, which allowed about three-quarters of an inch of mucous surface to appear, greatly disfiguring the face. The upper lip was also contracted by its cord, which was incised to allow the muscles of the lip to return to their normal condition. A section an inch and a half long and half an inch wide of the mucous membrane was dissected from either side of the centre of the lip, and the wound was united by means of sutures. The result was an entire success, there being no external wound or disfigurement whatever. At the close of this operation the union meeting was called to order, and a vote of thanks was given Dr. Curtis for his efforts in performing so successful an operation.

President Bartholomew.—The next thing on our programme is the discussion of the subject of pyorrhœa alveolaris, to be opened by Dr. M. L. Rhein, New York City.

Dr. Rhein.—More attention has been paid to this subject the past few years than ever before. I want to call attention to the necessity of first making a careful examination of your patient. We are all aware of the fact that there has been a great deal of discussion as to what constitutes pyorrhœa alveolaris. Many of the profession object to the use of this term, and it is a very poor term to signify all the trouble that comes under this head, yet I have not been able to find any other that will give a better definition, or one that will describe the variety of symptoms of this disease. That this is a local disease in which a thorough local treatment and cleanliness of the parts will cure is not any more true than of other diseases that have local manifestations. The discussions on this subject and the stand taken by so many men of eminence in our profession, and whose opinions are entitled to respect, is proof of the fact that this disease is not distinctive, but represents a variety of diseases which present themselves in the form of a discharge of pus around the necks of the teeth or from any of the alveolar portions. It is therefore necessary for us to make a very careful diagnosis of the trouble before we commence any treatment. It is this one fact that I wish to bring out most prominently in this discussion, and impress it on the minds of the dental profession. I do not believe the dental colleges pay sufficient attention to diagnosis. Heretofore the most of our treatment has been entirely mechanical, we have done only that which was in plain sight before us. When a man has a tooth to fill, he sees everything before him just as it is, and it is the same when he extracts teeth. As our profession has advanced we have taken up the treatment of diseases that embrace diseases of other portions

of the body, so that it is absolutely necessary for us to be certain of what we are going to do before we undertake to treat such diseases. The idea that pyorrhœa alveolaris is caused only by uncleanliness we must set aside. The treatment of this disease in its true form is one so complicated with the rest of the human organism that no man ought to undertake the care or treatment of such a case unless he is certain of the condition of his patient. If I have made myself clear on this subject, and the gentlemen here present will place the proper value on it, I believe they will find it of great advantage to them. It is not necessary that we all should be good chemists, or that we should thoroughly understand pathology, for we here have an opportunity of calling in the skill of other specialists, and getting their advice regarding the physical or pathological condition of the patient whom we propose to treat. It is a good plan, therefore, for those who are not skilled in diagnosing diseases, not to attempt the treatment of a case until after they have called in a specialist, one who can make a thorough examination of the whole body. Having a case presented to us that we call pyorrhœa alveolaris, the first thing necessary to decide is, whether it is the result of uncleanliness or not. Those who have seen many cases can generally decide this question. If we decide that the case is not the result of uncleanliness, the next step is to discover whether there is at the present time any general disability or any organ of the body in a pathological condition. Have a careful examination of the urine made. Sometimes you will make the discovery that some of the organs are in a diseased condition, of which previously there had not been the least suspicion. The mouth is the first part of the body that will show signs of any defects in the general circulation. Having established the fact that some of the organs are in a pathological condition will decide us in our treatment. Every known disease that afflicts the human organism often manifests itself as pyorrhœa alveolaris, and in many it is the first marked symptom. It only then requires a little common sense to be able to state to our patients what hopes we have of being able to restore to them the entire usefulness of their teeth. There is one form of this disease that puzzles us, and that is, where we do not find it as the result of uncleanliness and where we cannot at the time find any pathological disturbance. In these cases, if we will carefully question the patient and get a good history of their life, we will find that at some former time, perhaps only a few years, or maybe fifteen or twenty years back, they suffered from some severe disease, a disease that was very intense and which brought about this

condition of the gums at that time. After the recovery of their health, and having paid no particular attention to the mouth, this trouble has gone on from bad to worse. The cleansing of the teeth with the brush has not helped matters any, as the tissues have remained in the same condition as left by the disease. These are cases that respond to the proper treatment with remarkable celerity, and are such that we all like to treat.

I do not propose going into any lengthy discussion as to the etiology of this disease. That we have obtained so many favorable results from following our own practical conclusions, we can speak confidently of what the treatment must be. The first thing necessary is to remove all forms of deposit that may be on the teeth; when you find a case where there are no deposits on the teeth, that is strong evidence that you will find in the patient a pathological condition of some organ. Having cleaned the roots of every extraneous matter, getting rid of any necrosed or carious condition, the teeth must then be held together in some manner so they cannot move. When it is only necessary to hold them together for a few weeks or months, as that length of time will bring about a healthy condition, then by tying the teeth together with dental floss, thoroughly waxed, and passing it across the teeth two or three times, will be sufficient. This is better than the finest wire you can command, as you can more easily get into the small spaces.

If the teeth will not stand well without being held together for a length of time,—one or two years,—it is poor policy to trifle with floss or wire, as the food will fill in the spaces and defeat all your attempts. In such cases it is much better to perform some permanent operation, and this must depend on the skill and ingenuity of the operator having it in charge. Keep all apparatus away from the necks of the teeth. In many cases we can put our retaining appliance on the grinding surfaces of the teeth. Our next care is to see that the pockets are in a thoroughly clean condition, for cleanliness is the secret of success in the treatment of pathological conditions existing in the gums. The treatment I have mostly relied on is to inject the pockets surrounding the roots of the teeth with a solution of equal parts of H_2O_2 and a one to five hundred solution of bichloride of mercury. The next thing is to get rid of any pathological change around the roots of the teeth, and to remove this you will have to use some powerful agent. One agent that is now quite generally used for this purpose is a combination of caustic potash and carbolic acids. Having removed this condition, it is necessary to see that your patients do not neglect to

take care of the teeth. It will be necessary for them to use an antiseptic wash of some kind, and it must be used so that it will reach the pockets; it is necessary that these pockets be kept thoroughly clean, and a spray atomizer is excellent for this purpose.

Dr. Brackett.—I wish to express my appreciation of these remarks. I feel grateful to our friend Dr. Rhein that he has been able to point out what he has, and has shown us how much progress has been made. In so many instances, such special diseases as Bright's disease and uterine disease manifest themselves in the mouth. One great practical idea that has been so beautifully put to us is, that in the mouth we get the first indications of general manifestations of pathological conditions of different organs of the body, and, knowing this, we should be guided by these evidences of systemic changes.

Dr. Curtis.—This subject has interested me very much for the past five years, during which I have treated a large number of cases and tried to treat as practically as possible. I have followed Dr. Rhein very carefully in treating cases, and he certainly conducts cases from a scientific stand-point and with thoroughness. I have often referred my patients to him and he has been of great assistance to me. The fact that it is necessary to remove all foreign substances, also necrosed or carious portions that we may find, and to thoroughly support the teeth that they may form an anchorage afterwards, are the essential points that Dr. Rhein has brought up; then of the cleansing and preventing of formation of pathological conditions. I think we must go still further than local treatment. I find in a large percentage of cases that pyorrhoea alveolaris is a local symptom of a general disease; that the blood is very far below normal condition; the presence of oxide of lime and other crystals in almost all cases is also marked. These can be determined by tests of the urine, for this shows that by disintegration or lack of disintegration it fails to keep the blood toned to its natural functions. We find this condition in rheumatic and gouty patients, and very often in patients with this diathesis we find this disease manifested. To return the blood to its normal condition is very essential. I find in some cases an improvement of four per cent. in two or three weeks' time. I think we must combine the general treatment with our local treatment, for without this complete success cannot be hoped for. Many of the disturbances to the teeth and gums is from the filthy condition of the mouth. I cannot express this too strongly, but if taken in

time, much of this can be avoided. But there are cases where there are manifestations of tartar,—I think some one has described it as serumal tartar,—that accumulates on or near the apex of the root. That is due to the abnormal condition of the blood.

Dr. W. C. Barrett.—I cannot trace all cases of pyorrhœa alveolaris as positively as has been done by Dr. Rhein, which, in my hands, assume most of the conditions already named. It is not always due to the condition of health, and on close examination you may find it is not due to kidney troubles at all. You find one case just as distinct as another and without any relation to the diseases mentioned. I will cite the case of two ladies. There was in one case not the slightest disturbance of the urine. There was no connection with any disease whatever; for both of the ladies were in perfect health. Their personal habits were as perfect as any one's could be, yet these cases have been under my hands for several years and are under my hands to-day, in age they are from thirty to thirty-five. One is a mother of several children and the other married several years and is without children; both are standing above the ordinary height. They are women with good positions in life and are well nourished. Both of them are typical cases. There is absolutely no possible conditions of general disease. I have had examinations made of the urine, and everything is normal. Cases of pyorrhœa alveolaris are just as common in persons without the diseases mentioned as with. One says it is due to eating too much salt, because they never saw a person who had pyorrhœa alveolaris who did not use salt. Well, I never knew a person who did not use salt. Because we happen to find a person with kidney trouble and troubled with pyorrhœa alveolaris, we jump at the conclusion and say the former is the cause of the latter.

There are different phases of pyorrhœa alveolaris, because in one case there are pockets beside the root of the tooth and in another case there are no pockets. You cannot say one is pyorrhœa and the other is not. What is pyorrhœa alveolaris? It is necessary for us to go back and obtain a definition, that which shall distinguish it from everything else. My theory or your theory is not sufficient unless we can show what we claim. There is such a thing as caries of the alveolar wall aside from that which is called necrosis, a kind of breaking up. This may be pyorrhœa alveolaris, yet it is not necessarily so.

Dr. Maxfield.—A theory has recently been advanced that pyorrhœa alveolaris is a disease caused by the action of the pulp in the tooth, and the claim is made that this disease never occurs

on pulpless teeth. I would like Dr. Barrett's opinion on this theory.

Dr. Barrett.—I have not thought much of pyorrhœa alveolaris in connection with pulpless teeth, but there is a serumal deposit on the roots of teeth which is not salivary calculus. It must be necessarily of sanguinous origin. In regard to pulpless teeth I do not think there will be this breaking down which is common of pyorrhœa alveolaris in teeth having living pulps, yet the pericementum may possibly form a deposit on the roots of the teeth. In some cases the serumal deposit is quite extensive. My impression is that pyorrhœa alveolaris is ordinarily connected with teeth having living pulps.

Dr. Rhein.—I cannot comprehend how Dr. Barrett has so poorly understood me. I have not claimed any particular trouble as being the cause of pyorrhœa alveolaris in attributing it to constitutional causes; but I state this fact, that we do get pyorrhœa alveolaris in many of the forms that we know it as resulting symptoms from almost any disorder that the system has or may have had. My continued experience makes me most positive on this subject. Men may get it from any trouble, and so may women. There have been a number of cases under my observation where the trouble has been nothing but the result of systemic disturbances.

Dr. Barrett.—Dr. Rhein says he finds it in all diseases, then attributes it to all diseases. He must find it in some one disease, and whenever he finds it in some one particular case, then he has established a point that is connected with that particular disease. He must establish this connection, and he has not done so yet.

Dr. Rhein.—The point I make is, pyorrhœa alveolaris is a local manifestation of malnutrition of the parts, and we get malnutrition around the surfaces of the teeth before it manifests itself in any other part of the body. If there is any lack of stimulant in the circulation, it is going to be felt in the mouth first before it is felt in any of the extremities or larger organs of the body; and the conditions there are lack of nutrition, and not receiving this, they cannot remain in the condition which they have in state of health. What is more natural than that we should have retrograde action due to any disorder with the entire system in common. He asks for further proof, and to give this we must have some years yet to establish these things. I have been working over a year to establish these facts. I may find myself mistaken; if I am, I will be perfectly willing to admit it.

Dr. W. H. Atkinson.—It is certainly in my observation of this

disease of all that comes to me I attribute to loss of natural power in the elements of the parts involved; that it may be present in connection with many other unhealthy conditions goes without saying. Some of the most clearly-defined cases I have seen have been in persons otherwise in perfect health. I would say that it is known, and sufficiently within our grasp to learn much from it. What is the nature of the disease? Never necrosis. I never have seen any cases that could be at all legitimately termed necrosis. How does mercury expend its force in the mouth? The teeth get loose by the melting away around the necks of the integument, *and it goes down one side of the root.* It was these cases that influenced me to be thorough in cleaning out the parts to get good results. Chemistry is what we want to understand, pathological chemistry. Retrograde metamorphosis has two methods: one is disposure and slow nourishing until parts become irritated; the other is where normal nutrition is overbalanced so as to give us an abnormal blood supply.

Subject passed.

(To be continued.)

SEVENTH ANNUAL SESSION OF THE MARYLAND STATE DENTAL ASSOCIATION.

(Continued from page 420.)

Friday, December 6, 1889.—Morning Session.

Report of Committee on Operative Dentistry, by C. M. Gingrich, D.D.S., Baltimore.

There is perhaps no subject of so much interest and importance to the practitioner of dentistry, and no department in our profession in which there is so much *general interest* as that of Operative Dentistry. To this department, more especially than to any other in the profession, devolves the preservation of the natural teeth, and it is the desire of your committee that this subject receive from the association the attention commensurate to the importance of the interests involved.

The standard to which the profession has attained is the result of scientific and intelligent investigation, indefatigable exertion, and unremitting labor. The men who, fifty years ago, labored so faithfully, who were so hopeful, so sanguine, and who expected so much

for the future of the young profession, never dreamed that in so short a time so much would have been accomplished.

The profession of to-day is beginning to properly appreciate and understand the scientific and intelligent application of all that modern research, investigation, and experience has developed.

The resources to which the operator in this day of progress has access are so unlimited, the means at his command so ample, that there can scarcely be an excuse to be confined within the narrow limits of a single theory which is made to subserve all indications.

The careful student of dental literature, and close observer of discussions in our dental societies, will notice that a change of sentiment is manifest and has been pervading the department of operative dentistry during the past decade, and one of the most healthful indications is the spirit of liberality and exercise of more discretion in the use of the different materials at our command for the preservation of the teeth of our patients.

Older operators remember when an attack was made on amalgam by some of the writers and exponents of operative dentistry who urged every possible argument against it, and even went so far as to have members expelled from dental societies who would not pledge themselves to discontinue the use of amalgam fillings. To-day, the profession is willing to use any material, though it be amalgam, when its use is indicated to preserve a valuable molar, and unprejudiced views now allow common sense to suggest this material when the success of a gold filling would be questionable.

The introduction of cohesive gold opened a new era in the practice of operative dentistry,—in fact, the induction of this new form of gold revolutionized practice in all that it implies and comprehends. Nothing has ever been given the profession which was so universally accepted and which met with so much general favor. The profession was almost a unit in its abandonment of non-cohesive and substituting therefore cohesive gold. It very soon became the theme of discussion in dental societies; the essayist needed no other text to entice the ear of his audience; the clinical demonstrator required no other mode, and the teacher gloried in the day of its acceptance. The cohesive era developed many forms of gold, including every gradation of heavy and light foils, together with crystal sponge and fibrous gold, cohesive and extra-cohesive, so that every imagination of the operator could be gratified. With it, also, came the various forms of mallets, those most generally ac-

cepted and in use being the electro-magnetic, automatic, and the hand-mallet, all of which have their advocates and individual preferences.

The question may very properly be asked, Have the advocates of cohesive gold realized all that was expected? Have the results been as gratifying as the promises made? Have they performed better operations than their predecessors, and saved as many teeth in proportion to the number filled as those who knew nothing of cohesive gold? In the first place, we answer we do not believe that cohesive gold offers the advantage in a great majority of cases as a filling material that "the old fashioned" foil does.

In difficult and remote cavities, the operator to use this gold is compelled to do much unnecessary cutting away very often of valuable tooth structure, so as to make the cavity accessible.

It is conceded that almost direct access must be obtained in order to use this foil to even approximate ordinary adaptation.

On the other hand, non-cohesive gold, yielding readily under the pressure of the instrument, can be driven to the remotest parts of the cavity, and perfect adaptation secured with half the effort on the part of the operator and less discomfort to the patient.

Let us take for illustration ordinary cavities in the six anterior superior teeth. How can the operator justify himself in cutting these teeth through from the labial surface in order to gain access simply to fill the cavities with cohesive gold? Again, how can he justify himself to display gold in a patient's mouth when it could have been so easily avoided? Every operator with any experience has seen these operations done as here briefly described.

With non-cohesive gold these cavities can be as conveniently reached by cutting the teeth from the palatal surface and entirely exposing the cavities and leaving the labial surface intact, thus preserving the beauty of the teeth, not destroying half as much tooth structure, and preserving the teeth as well. We assert, and we do not believe there is a member in this association who will have the assurance to say that there were ever better operations and more teeth saved than by the old operators, who were confined to the exclusive use of non-cohesive gold. It is a genuine pleasure and gratification to see these operations that have stood untarnished for more than a quarter of a century. They stand as a monument perpetuating the memory and ability and mode of practice of the men who laid the corner-stone of our noble calling.

As an adjunct to operative dentistry, nothing has ever been given to the profession of so much value to both operator and

patient as cohesive gold. In the restoration of contour, when it is indicated and required, nothing can take its place, and we have nothing at our command to even approximate its usefulness.

To replace broken-down tooth structure it is the only resource at our command, and, as intimated above, it is an invaluable auxiliary in operative dentistry, and it is not probable that the profession will in the near future have control of any material with which it can so conveniently and so efficiently accomplish this most desirable and, very often, this most important part of an operation.

Neither the profession nor an individual can ever be justified in accepting any theory, mode, or material as a dogma, and make every condition in practice subservient to it. The faithful operator will always yield to judgment and discretion in the selection of material in order to bestow upon his patient the greatest good, whether it be non-cohesive or cohesive gold or any other material at his command. It is this very point we wish to emphasize, and we are glad to report to this society that the profession is rapidly extricating itself from the depth of narrow channels, hobbies, and dogmas, and placing its feet upon the rock of truth, where it will reflect its greatness on all future generations.

In illustration of this feeling in the profession, we recall the electro-chemical theory, or "new departure," as it was called a few years ago, which had for its text, "in proportion as teeth need filling, gold is the worst material to use." A few enthusiasts heralded this heresy from the Atlantic to the Pacific and urged every possible means to arbitrarily drive the profession to accept the dogma, which had no other merit than the escape of labor entailed by inserting an honest and permanent filling in a tooth which needed the very best material for its preservation.

After this came another from across the deep blue sea, which had nothing more to recommend it than the beautiful colors radiating from an uncrystallized piece of quartz. The profession, as in duty bound, took due notice of these new theories, and, upon investigation, relegated them to that oblivion to which they justly belonged.

Your committee is most happy to report progress in the profession, and that it is marching onward with gigantic strides.

Let us ever remember that "knowledge is power," and that on our intelligence rests the future prosperity, grandeur, and glory of our profession. Let us, then, go on with a laudable ambition and unyielding perseverance in the path which leads to honor and

renown. Let us press forward and gather laurels from the hill of science, linger among her unfading beauties, "drink deep" of her crystal fountain, and we shall join the march of fame.

Respectfully submitted.

DISCUSSION OF DR. GINGRICH'S REPORT ON OPERATIVE DENTISTRY.

Dr. E. Nelson, Baltimore.—I listened to the reading of the paper by Dr. Gingrich with much care and interest. I very cordially endorse many of the positions which that gentleman assumed in the paper. If I mistake not, the essay does not unqualifiedly endorse soft gold as proper to be used in all cases,—that is my recollection of it,—but it assumes the position that, in the selection of material, or of the particular form of gold, for filling the teeth, the operator must be guided by his best judgment. The gentleman very properly alluded to the number of teeth that had been filled prior to the introduction of cohesive gold and which still remained as standing monuments of the skill and success of the operators by whom the fillings were inserted. I wish to corroborate the truthfulness of what he has said on that point by what has come under my own personal observation. I refer to the case of a sister of mine who is now residing in the city of Baltimore, for whom, thirty years ago, Dr. Volck inserted two fillings in the incisors, and I say to Dr. Volck that those fillings are to-day as good as they were on the day she left his office.

I agree with the author of the paper that there are circumstances in which soft gold is infinitely better than cohesive gold, and in which cohesive gold cannot be used. On the other hand, there are circumstances, owing to the position of the teeth, the location of the cavity, and the convenient use of the mallet, in which cohesive gold is of superior value. I think it is a mistaken idea for any one to confine himself exclusively to the use of any special form of gold, or to assert that, in all cases without exception, a particular form of gold is the only one to be used. It strikes me that the exercise of proper discretion and judgment in all cases, as to the form of gold, is the rule to be observed.

Dr. Charles D. Cook, Brooklyn, N. Y.—I did not have the privilege of hearing the paper read, as I was not present at the time, but as the subject of the use of what is known as non-cohesive or soft gold is to some extent under discussion, I may say that I probably belong to the past generation in the matter of the use of soft gold. That was the only form of gold of which we had knowledge when I commenced practice. Practically I have used

it more or less from the day it was first introduced down to the present time, and I could not well dispense with it. If I were compelled to relinquish the use of either, I would prefer to part with crystal or cohesive gold, though, of course, I would do so reluctantly.

I have been in the habit of using the soft foil or non-cohesive foil at the cervical wall of approximal cavities and crystal gold, as the indications may seem to warrant, in connection with the soft foil. I use the soft foil first and then finish with the cohesive gold. I very seldom fill a cavity with cohesive gold alone. Crown cavities of molars can be filled with soft gold equally as well as with cohesive gold and much more quickly than with the latter, saving much time to the dentist and to the patient and presenting an equally good operation. I do not depend upon the union of the two for their retention in the cavity but upon the shape of the cavity, as though practically soft foil was used independently of the cohesive foil. As fine operations as any I have ever seen with any kind of foil were from the hands of Dr. Dunning, of New York City, one of the most accomplished operators we have ever had in America, who, as you know, has been prominent for his advocacy of the use of soft foil.

I think that our dental colleges have been negligent in failing to impart practical (not theoretical) instruction in the use of soft foil with the hand instrument. I think we are able to obtain results that are infinitely better than, would be obtained by the exclusive use of cohesive foil. I do not see how the profession could well serve the public if soft foil was excluded from our practice.

Dr. C. C. Harris, Baltimore.—I have always tried to be an observer, and it was, I think, from observation that I acquired certain convictions. One of which is that in the practice of dentistry we must be conservative, and, first of all, we must utilize everything that is of value. We must learn to use both cohesive and non-cohesive gold. It strikes me that any one who uses both with a comparative degree of success will never be willing to give up one for the other. They must both be used together. I feel that if I was compelled to abandon the use of cohesive gold I would actually have to relinquish my practice. I do appreciate cohesive foil, and I realize that it is a good thing in its place and that there is nothing that can fully take its place. I have read much on the subject in recent years, and have observed that there are many advocates of the use of amalgam for the cervical walls and of the

use of cohesive foil as you come to the grinding surface. That is where soft foil belongs, and, in the hands of a capable operator, it can be used there as successfully as amalgam. Amalgam possesses no advantage over soft foil for the cervical walls of the teeth. In that particular, I think, there is a tendency towards neglect in our work. When it is said by some men that the cervical walls fail more rapidly than other portions, it is quite likely that that is true; but if a man will keep his mind on his work and adapt his soft foil to the cervical wall thoroughly, if he will see that it is condensed there as permanently and as nicely as he wants to have it in other positions, I think he will eventually meet with success.

Only a short time ago I had two patients in my office, for whom I was working during the same month, one was a lady for whom Dr. Chapin A. Harris filled from ten to fourteen teeth with soft foil sixteen years ago. Those fillings were all standing and impervious. The other patient was a lady who had been treated eight or ten years previously by a prominent dentist. She had molars that were almost entirely built up of gold, and bicuspidis with their approximal walls also contoured beautifully with cohesive gold. I had never seen more work in a single mouth than I saw in the mouth of that lady, but, with hardly an exception, her back teeth had all been patched with amalgam. I mention this as showing that cohesive foil from the best hands must fail if the other fails. Those cases presented two samples of the work of two of the best workmen in the country.

In connection with what I have said I want to mention that where gold and amalgam were both together, although the work was done years ago, the saving of the teeth from that time was, as far as I could judge, more apparent than it was with respect to the time prior to that.

I am inclined to believe that there is something in the talk which I have heard, to the effect that, where decay attacks the surface of a tooth around the gold filling and it is overcome with amalgam, the two will probably do better service than would be done by either one of them alone. At the same time, I do not yield on that point my opinion that soft foil, if inserted in those places which are more susceptible to attack from decay, will accomplish all that *can be claimed* for amalgam.

Some allusion was made in the essay to amalgam, and that leads me to say that there are many operators who seem to be ashamed to admit that they use amalgam. For my own part, I have to say that I am not ashamed to make the admission, but, on

the contrary, I am proud to have it known that I do use amalgam. I believe that amalgam in its place is a good thing for both the rich and the poor. It is a desirable thing for rich people in that it saves them from the annoyance of prolonged and tedious operations which many of them perhaps could not endure, and for our poorer patients because it enables them to save their teeth by less expensive operations than they otherwise could have.

Dr. Mills.—Dr. Harris has spoken of some cases in which gold foil has lasted for a certain number of years. I am familiar with a case which, I think, is a little more remarkable than any to which allusion has been made. Recently I undertook to extract a tooth from the mouth of an aunt who was eighty-eight years of age. In the crown of that tooth was a filling of soft foil which had been placed there, as she informed me, exactly sixty years before. She stated that it had been made by Dr. Maynard, an old practitioner, of the city of Washington.

I will say that I am an advocate of the use of soft foil in some cases and of cohesive foil in others. I think the use of the two should be combined, and that, as Dr. Harris has suggested, we should not assume a radical or ultra position by contending for the exclusive use of either.

In connection with what has been said, I may add that sometimes my fillings of oxyphosphate of zinc remain perfect, and I have tried to ascertain what it is that makes them do so under certain conditions and not under others. There was one case in which a lady brought her daughter to my office and stated that she wished to have her teeth filled with gold, but I refused to comply with her request because of the soft condition of the patient's teeth. I was allowed to have my own way about it, and I filled the teeth with oxyphosphate of zinc. The fillings I inserted remained for two years, and at the expiration of that time showed very little disintegration. Believing the teeth to be then in a condition to warrant it, I filled them with gold. Upon sending for the patient within six months thereafter and having made an examination of the mouth, I discovered that, of these latter fillings which I had inserted, five had dropped out and only one remained, and that one was rolling around in the cavity. I again filled her teeth with oxyphosphate of zinc. I remember that I filled two bicuspid with oxyphosphate of zinc from the same mix, when it was in that state which we call "crystallization," or beginning to crumble. I kneaded it together into a soft paste between my thumb and finger and forced it into the cavities rather carelessly and more

for the purpose of experimentation than anything else. Much to my surprise, two years or more after, I discovered that the fillings were not only remaining perfect and as they were when inserted, but that the surfaces had assumed a hard, glassy appearance.

(To be continued.)

AMERICAN ACADEMY OF DENTAL SCIENCE.

ADDRESS OF PROFESSOR F. W. PUTNAM BEFORE THE
AMERICAN ACADEMY OF DENTAL SCIENCE AT THE
PEABODY MUSEUM OF ARCHÆOLOGY AND ETH-
NOLOGY, CAMBRIDGE, JANUARY 8, 1890.

MR. PRESIDENT AND GENTLEMEN,—The principal object I have to-night is to call your attention to the importance of our collection of crania in a study of the diseases which affected the teeth and bones of the mouth of the people living in America at the time of, and prior to, the first occupation by the Europeans.

In our large collection, containing several hundred crania from various parts of the world, and, probably, over fifteen hundred from America, there is considerable valuable material for the study of various diseased conditions of the mouth, singular modifications of the palate, and anomalies in the position and shape of the teeth. I might have brought hundreds of crania to the lecture-room, all of which would have been interesting from your professional point of view, but I have limited myself to the few on the table, simply as examples of what you may expect to find if any of you wish to make a study of the whole collection.

Here are twenty skulls from the Santa Barbara Islands, off the coast of Southern California. In 1542 the people of these islands and from the main land came into contact with the Spaniards; and after the establishment of the missions on the coast they rapidly deteriorated, and finally succumbed to the changed conditions of life forced upon them by the whites, and to the vices which the contact brought about.

While many of the burials on these islands were long before white contact, others were after that period, as shown by the various objects of European work found in the graves. Hence we have here the opportunity of tracing the effect of the change of life

which came to the people, and some of the marked cases of diseased conditions may be due to this change. Still it is evident that the primitive life of the people and their peculiar food had much to do with the singular wearing away of the teeth which is noticeable in this series. Starting with this skull, where every tooth is sound, you will notice the flat crowns of all, and the perfect occlusion. I think you have seldom seen a nearer approach to the movements of a jaw of a ruminant in a human subject than must have been the case in this man. Passing from this skull down the series as here arranged, you will notice the gradual wearing away of the teeth caused by the grinding of hard substances; this wear was probably increased by the sand mixed with the food, derived, partly, from pounding the seeds and acorns—which probably formed a constant diet—in stone mortars. As a result of this grinding process we can trace all the abscesses, and terrible suffering which the people must have endured, as shown in these jaws. Finally, nature gave relief to those who survived the suffering, by throwing off the roots of the teeth and closing the alveoli, as shown to be the case in so many of the crania, where, even before great age, the maxillaries were reduced to thin plates of bone.

So much has been said about syphilis in America, and that foul disease has been so often considered as of American origin, and responsible for many of the conditions met with in crania such as these, that I shall take this opportunity to say that, so far as can be determined by a study of the skeletons which we have, I consider there is not the slightest evidence of the occurrence of the disease in America until after contact with the whites. These skeletons have been studied by specialists, but in no case has any trace of the disease been found in skeletons antedating white contact. It is but just, therefore, to relieve our native American peoples from this foul imputation.

For comparison with the California crania I have chosen this skull of a Massachusetts Indian. This skull is from Winthrop, and from a burial-place which I have reasons for believing was not used after the first settlement of the whites at that place, at least two hundred and fifty years ago. This skull is of the same shape and character as the Californians, but you will notice that while this has a bad abscess in the under jaw, the teeth are not ground down in the same way as in the California crania. Here we probably have the evidence of a different diet and one containing not quite so much sand and gritty material.

In this series of skulls from the Sandwich Islands is probably

the evidence of another kind of diet,—flesh and fruit. In the skulls the teeth are all sound and sharp and no sign of grinding or wear. Then, again, the jaws and palate are more like those of the white race; and, as you will notice, they have not the constant width of the Californians, but vary very much in shape.

Professor Putnam then called attention to a number of anomalies in the dentition of the several skulls on another table. They were from Peru and from the mounds of Ohio. In several of the Peruvian skulls the lateral growth of the third molar was pointed out, and in those from Ohio he referred to the probable later development of this tooth and its non-development in some instances.

He also pointed out several instances of supernumerary teeth, and one skull where the left canine had turned laterally and posteriorly and penetrated the maxillary under the anterior edge of the malar bone.

As showing the resistance of enamel to natural decay, a mass of clay was shown which contained the enamel shells of a full set of teeth, while the skull and all other portions of the skeleton had been reduced to fine particles, or bone dust. This was from a very old burial near the Serpent Mound in Ohio. He had in several other instances found the enamel of the teeth the last part of the skeleton to decay. In some instances, however, he had found fragments of bones, even the spongy portions of the humerus, where there was no trace of other bones or of the enamel of the teeth. He could not say, therefore, that the enamel was always the last to decay, but thought this was likely to be the case with the skeletons of children.

DISCUSSION OF PROFESSOR PUTNAM'S ADDRESS.

President Seabury.—Gentlemen, we have all listened with great pleasure to this very interesting lecture of Professor Putnam. The matter is open for discussion or questions. I presume you have many questions which you would like to ask and which Professor Putnam will be glad to answer.

Dr. Fillebrown.—I would like to ask more particularly as to the age of these California skulls,—were they young people or adults? Has it been demonstrated that they when young had cusps that were equally prominent with other races?

Professor Putman.—On that point you will have to put the facts together and draw your own conclusions. You will find that the teeth are very large. Now, it is beyond the power of the average investigator to get at the exact age of the individuals, but judging

by the sutures,—which we go by in determining the age more than by any development of the teeth, because we cannot assume the protrusion of the teeth in other races at the same years as in the white race,—all the skulls on the table are fully adult and many of advanced age.

Dr. Fillebrown.—In looking over the skulls of these Californians, I should say that the cusps of the teeth of this people were less prominent than in the Sandwich Islanders, and that the occlusion of the teeth has more nearly the characteristic of the ruminant, and that the overhanging of the upper jaw is less pronounced than in the races of the present day. To-day we consider it an exception where the teeth occlude all round; but here the indications are that it was a race characteristic.

Professor Putnam.—I think it will be found to be common to many peoples other than the white race.

Dr. Fillebrown.—There is one more question which I should like to ask Professor Putnam, and that is, whether or not there are some indications by which you can determine the sex? The appearance of that Roman skull seems to indicate its being the skull of a female. In the first place, the bones seem to me to be thinner, and secondly, we see smaller teeth and more delicate ones in every way, and especially I notice the characteristic of the lower jaw that seemed to indicate to me that it was the jaw of a female.

Professor Putnam.—Taking all the male and female characteristics into consideration, I should regard the skull in question as that of a woman. I suppose it is hardly fair to compare a Roman lady with a California Indian, but we will do so in this case for the sake of contrasting her skull with this skull, which has all the male characteristics so strongly marked that you can see the differences at once.

Dr. Fillebrown.—I trust Professor Putnam will not consider that we are boring him, but I am so much interested in the comparison of the skulls here, and as it is a line of observation that I have not been familiar with before,—my own observations having been confined to the upper jaw,—that it would please me very much, and I believe others also, if he would show us the comparison of the sexes more thoroughly and explain what are the distinctive characters of the males and females.

In reply, Professor Putnam pointed out many differences which are considered as sexual, and stated that the differences between the sexes were not so marked among savage peoples as among civilized.

Dr. Fillebrown.—I have just one more thought to present, and

that is a conclusion I received from the hint that Professor Putnam gave us to-night. I have thought of this before, but it has more clearly than ever appeared to me to-night. It has been claimed that a typical set contains forty-four teeth. The transition from the human incisor to the cuspid, and from the cuspid to the first bicuspid, also from the second bicuspid to the first molar, is very marked. I understand the theory is that one incisor and a first and fourth bicuspid have been lost in the development of the human type. Professor Putnam's observations seem to indicate that when the more perfect man shall arrive, a few thousand years hence, the third molar will be obliterated.

Dr. Andrews.—I would say that a former patient of mine had the fourth molar, thirty-six teeth in all. They did not cause any inconvenience, nor have the appearance of an anomaly, but they were as beautiful a set of natural teeth as I ever saw.

Dr. Fillebrown.—I have a model of a mouth that I took where the patient had three well-developed bicuspids.

Dr. Andrews.—On both sides of the jaw, upper and under?

Dr. Fillebrown.—I do not remember about the under jaw, but on both sides of the upper jaw there were three fully developed bicuspids.

Dr. Andrews.—Mr. President, I move that the privilege of the floor be allowed to all those present.

The President.—Without the formality of a vote, I know that the privilege will be accorded to any one wishing to speak. We shall be happy to hear from any gentleman present.

Dr. Codman.—There is one thing it seems to me has been brought out this evening, and that is, that similar causes bring about similar results. Here are the skulls of a race of people who lived in a certain way, and their teeth are worn down accordingly. If they had lived in another way, if they had another diet and other habits, the development of the wear of the teeth would have been different. Diet has a very strong influence in the wear of the teeth.

Dr. Taft.—One thing that I noticed, especially in the teeth of the lower jaw that were passed around, was the peculiar wearing away from the lingual to the buccal side almost down to the gums. I would like to ask Professor Putnam whether that comes so much from the diet as it does from the occlusion, which so closely resembles that of the ruminants?

Professor Putnam.—I could not say; it does exist throughout all the skulls of these Californians.

Dr. Taft.—You spoke particularly of their diet consisting of acorns and roots.

Professor Putnam.—Yes; it must certainly have had some effect.

Dr. Fillebrown.—There is another thought that occurs to me in regard to the appearance of these teeth. If any one takes food into their mouth upon the right side, they will be sure to move the jaw towards the left, and *vice versa*. Consequently the bite comes upon the inner cusps of the upper teeth, and the outer cusps of the under teeth. That will account for the wear of all the teeth of these skulls.

The President.—If there is nothing more to say, we will pass the subject.

Dr. Fillebrown.—Mr. President, I think at this time it would be very appropriate, and I move you, sir, that the hearty thanks of this society be tendered to Professor Putnam for his very interesting lecture before the society.

Professor Putnam.—Mr. President, in accepting this vote of thanks, I wish to say that this museum was founded for the study of anthropology; that it has been the work of years of earnest endeavor to make collections which will give the means of studying man in all his various conditions and habits. We wish to have this museum made use of, and I hope that you will avail yourselves of the facilities it offers.

WILLIAM H. POTTER, D.M.D.,
Editor American Academy of Dental Science.

Editorial.

PERSONAL.

THE change in the management of this journal was fully announced in the last (July) number. There remains, therefore, but a word from myself on assuming the editorial control. The exigencies of the situation seemed to force this work into my hands, and, with reluctance, I consented to bear burdens not wholly unfamiliar.

It is not necessary that any policy should be outlined. The course of this journal will remain as it has in the past, an earnest factor for the elevation of the profession. It will be outspoken when necessary, and will hold, it is hoped, a positive but impersonal tone on all controverted questions.

With a full knowledge of the fallible character of all human efforts, the work is entered upon with a consciousness of possible mistakes, errors of omission and commission; but this feeling is accompanied by the assurance of the co-operation of the best element in the dental profession. Without this the work of this journal would be valueless; indeed, would have no excuse for an existence.

While it is not expected that any radical changes will be made in the arrangement of the matter, it is anticipated that improvements will be introduced as time and experience indicate their value or necessity.

The work of such a journal needs and must receive the earnest thought of the best writers and investigators of this specialty. For them it was instituted, and, as their organ, it should be the receptacle of the work of their brains and hands. It should publish the proceedings of every organized society in the United States, and, it is hoped, it will continue to receive a fair proportion of the work of the associations abroad.

With this expectation, based on the earnest support given in the past, and recognizing that all shades of thought represent that frictional activity so necessary to true progress in all directions and among all peoples, I enter upon this labor with the assured hope

that the journal will remain permanently to exercise a healthy, vigorous, and lasting impression on the profession of dentistry.

JAMES TRUMAN.

THE NEED OF THE HOUR.

THERE are periods in human activity, as there are cycles in all progress, in which we have the slow movement upward, the rapid rotation, and the dead centre of stagnation.

The profession of dentistry has passed through these various stages in common with all active human effort. The present seems to be one of unusual activity in certain directions, and the earnest work infuses new life into all departments of labor. In proportion to the increase in mental effort there follows the critical period,—the unrest,—the grasping for the ideal,—the, perhaps, unattainable.

This thought finds its origin in the variety of topics discussed in the dental journals, outside of purely professional matters. At times these have bordered very closely on hypercriticism, forcing the conclusion that, possibly, a personal feeling has influenced the writers; or in others, perhaps, the true scientific interest, in building up weak lines, is paramount. This is unquestionably the true evidence of progress. The idea that advancement can be made on a union of sentiment has long been discarded by those able to analyze, even to a limited degree, the forces which actuate mental states. We do not need so much a unification of thought as we do harmony in effort. The notes of discord may be present everywhere, but they are only the signs of the revolution of ideas towards a common centre.

It seems to be a mistake that some regard with disfavor any efforts except such as coincide with their ideas. The new college, the new journal, the new machine are all alike distasteful to the conservative mind; nevertheless the forces that are constantly resolving the elemental into the concrete are not bounded by such limitations of thought.

Dentistry is no exception to the general law. The men of to-day are not where their fathers were, or should not be. The old days of isolation have passed by, and the ruts of the ancient roads of scientific knowledge alone remain to remind us of the immaturity of the early experiences.

Are we building better than the fathers? Are we sowing the seeds of criticism to germinate into the flower, fair to the eye but poisonous to contact? Do we forget that the parts of every machine differ in size, form, and function; but all serve to unity of effort?

We are led to these remarks by noticing a tendency to fault-finding permeating the writings of many. It is the association here, the college there, and the journal always. The difficulties that surround all these forms of professional effort are numerous, and rarely understood by the uninitiated. The critics should go to deeper soundings. They should remember that evolution has not yet made the perfect man, possibly never will, and until better men are developed all things will remain imperfect.

If such be the crudity of professional work, what is the duty of each member of this calling of ours? If we are on the ascending scale, are we not in danger of future stagnation? This may certainly come; but it will meet us more quickly if each one say to himself, "I will let some one else do the work, 'but as for me and my house,' we will serve self." How many of the twenty thousand dentists in this country are to-day reasoning from this lower standard? Count the number actively engaged in professional work, men and women who attend conventions, are active in their local societies, who contribute their quota to the journals, through their local, State, or national organizations, and it will be found that the remainder constitutes a heavy drag to progress.

There is work to do for every man and woman engaged in the practice of dentistry to-day, not a work that will build a fine house, give you an elegant span of horses, clothe yourself and family in the best apparel; or that which will tend only to narrowing your efforts to individual gratification. Let these broaden in a professional outlook, and do something worthy of the calling of which you are an integral part.

The conventions, national and international, have closed their work for this year. The men who "compassed sea and land" to make these worthy of this professional period, did they do this for their own selfish gratification? The question needs no answer. They with you were worn with the labors of the year; but you will be found either delving at home for gold, at the risk of a broken constitution, or you are seeking mountain air and sea-shore with the remark, it may be, "Oh, I never trouble dental conventions!" Is this the right spirit? We need more and more the

self-sacrificing feeling that will lay down a portion of all that we may have upon the altar of professional worship.

We are reminded that it will be said, "as the world has been so will it always be;" but we prefer to believe that the world will be as we design to make it, and we, each of us, are responsible whether it be a pandemonium or a paradise; whether professionally it means from this time an inferior body of workers or an ever-increasing standard of excellence. Which shall it be?

THE UNION DENTAL CONVENTION.

It will be observed by the card on another page that the profession in New England propose to combine fourteen different societies in one meeting on October 28-31, 1890. This union meeting promises to be one of the largest as well as one of the most valuable held in that section. It truly represents New England, and no doubt will have its influence in leading to other sectional organizations to take the place of isolated society effort.

They propose to make the exhibition of "articles, instruments, and materials of use in dentistry" not only full, but instructive, including in it a department of dental journals. This idea, in its proposed extent, is, it is believed, novel in dental conventions, and should be of great value in educating many to the importance as well as to the extent of this branch of dental work.

Domestic Correspondence.

TO THE EDITOR:

At the meeting of the Michigan Dental Association, Dr. Crouse presented the following views on the Dental Protective Association. Dr. Crouse's remarks were: First, that by combining in some such an organization as the Dental Protective Association we band the strength of ten thousand men into one,—all defence necessary can be made with but little more expense than would be required for an individual. The preparation of our case will answer for all,—all evidence can be collected better by an association than in any other way. Second, that it is very important that all get into the Association at this time, for the reason that an appealed suit, to the Supreme Court, before the formation of the Protective Association, will probably be decided in favor of the Crown Company, owing to deficiency of evidence and imperfect presentation. If the Crown Company win this suit, they will send notices all over the United States, thereby demoralizing the profession and causing many to pay them money who should be in the Protective Association, and thus avoid that calamity. The Protective Association will be ready with new evidence of a new record and can take care of its members against any claims of the Crown Company. If you are not in the Association, it will not take care of you when the time comes.

If each man in the profession will pay \$10.00 and assume a responsibility of ten more, without any further assessments, we will have an organization that is sure to break up all this abuse, and save the dental profession an annual outlay, on an average, of \$100.00 each, to unjust claimants.

Remember, it will cost more than \$10.00 to join later, and will certainly cost more than that if you do not protect yourself.

Resolved, That the Michigan Dental Association heartily approves the aim and plan of the Dental Protective Association; and that it is further

Resolved, That it is the duty of every member of the dental profession, in this State, to join the Dental Protective Association. It is also

Resolved, That Dr. Crouse be requested to furnish the dental journals with an abstract of his remarks for publication.

W. H. DORRANER,

W. G. SAUNDERS,

— DOUGLAS,

Committee.

WM. CLELAND,

Secretary Michigan Dental Association.

TO THE EDITOR:

The Virginia State Dental Association will hold its Twenty-first Annual Session in the high-school building, at Roanoke, Virginia, Tuesday, August 26, 1890, beginning at nine o'clock A.M.

We confidently expect this to be the largest and best meeting the Association has ever held.

All members of the profession are invited to attend, and will receive a cordial welcome.

J. HALL MOORE,

Corresponding Secretary.

RICHMOND, VA., July 11, 1890.

THE State Board of Dental Examiners will meet at the same time and place for the examination of candidates to practice dentistry in the State. All applicants must be graduates of some reputable dental college.

W. E. NORRIS,

Secretary.

Current News.

UNION DENTAL CONVENTION, Department of Exhibits, October 28-31, 1890, in Berkeley Hall, corner Berkeley and Tremont Streets, Boston, Massachusetts.—The following fourteen societies will hold a union meeting: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut State Societies; American Academy of Dental Science, Connecticut Valley Dental Society, Harvard Odontological Society, Harvard Dental Alumni Association, Boston Dental College Alumni Association, Boston Society of Dental Improvement, Worcester Dental Society, New England Dental Society.

You will observe by the above list that we are to have the largest and most representative meeting of the dental profession ever held in this section of the country.

All persons having articles, instruments, and materials of use in dentistry are cordially invited to exhibit the same. Many have already signified their intention of making a large exhibit, and if you desire space, please notify the Secretary at once, giving amount of space you can occupy well, whether floor or table, and height of same. All applications should be made before September 15.

Programmes, with list of exhibitors, issued October 1.

WM. P. COOKE, D.M.D.,

W. E. PAGE, D.M.D.,

H. S. DRAPER, D.D.S.,

Exhibit Committee.

Applications to be made to either of the Committee, or addressed to the Secretary.

WM. P. COOKE, D.M.D., *Secretary,*

100 Boylston Street., Boston, Mass.

OBITUARY.

WILLIAM ROBERT WOOD, L.D.S., aged forty-eight, died at Brighton, England, May 1, 1890. He was widely known in England; was colonel in the volunteers (artillery), and took great interest in many local institutions. He filled high positions in Masonic lodges.

H.

WHILE accepting the "germ theory," Dr. John H. Coyle calls attention to that condition of the secretions of the oral cavity which through action and reaction acts chemically on the dentine, dissolving out a portion of its lime-salts, producing a local habitat for the specific microbes which produce caries, a condition of which many seem to fail to appreciate the real pathological significance.

DR. WARDLAW says it is begging the question to tell patients that the teeth decay because of "a fashionable artificial mode of life," because of "environments," because of "eating slops and soft-boiled food," because of "the modern degeneracy of the human race," etc. These are only predisposing causes, with perhaps a modicum of truth.

DR. CATCHING suggests covering the top of your operating-table with heavy white paper, over which lay a good plate of glass, with a raised moulding around the edge. This is easily kept bright and clean, and your points are plainly visible.

DR. JNO. H. COYLE says that treatment of alveolar abscess often fails because of necrosis of the apex of the root. The only cure is found in extraction, cutting off the necrosed portion, and replanting.

DR. S. A. WHITE, in regulating, uses the same shaped plate for every kind of irregularity, a vulcanite plate having a band running outside of the incisors and covering the bicuspid and molars, and also a band on the palatine surface.

DR. CATCHING finds the small porcelain dishes used by photographers and painters for mixing colors very useful about the operating-table; "individual" salts and butter-plates are also handy.

DR. SID HOLLAND fills roots with gold rolled so thin on a fine broach as scarcely to increase the size of the broach.

THE International Dental Journal.

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No. 9.

Original Communications.¹

ON THE DANGERS ARISING FROM SYPHILIS IN THE PRACTICE OF DENTISTRY.*

BY L. DUNCAN BULKLEY, A.M., M.D.,

Attending Physician to the New York Skin and Cancer Hospital, etc.

(Continued from page 456.)

RODDICK,² of Montreal, has recorded a case of more than usual interest, where the primary syphilitic sore on the gum was undoubtedly the result of inoculation by means of dental forceps used in extracting a tooth; it is worth mentioning somewhat in detail. The patient was the wife of a physician, aged about thirty, and the mother of healthy children. She had always been in excellent health until about a year previous to her visit, when she had a tooth extracted, the operation being difficult and accompanied by considerable laceration of the gum. The wound showed no tendency to heal, but became sloughy and indurated. Within a few weeks the glands beneath the jaw were found to be enlarged, and shortly an erythematous rash covered the body and extremities, followed

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the New York Odontological Society, April, 1890.

³ Roddick, *Montreal Med. Journ.*, August, 1888, p. 98.

later by a papular and squamous eruption, and sore throat and alopecia were soon added, to complete the picture of constitutional syphilis. Careful investigation failed to reveal any other source of contagion than the dental operation; the husband was entirely free from disease, and Dr. Roddick, who is an exceptionally careful man, and thoroughly qualified to judge, concluded that "in all probability the instrument used by the dentist was made the vehicle of contagion by being brought in contact with a mucous patch in the mouth of a syphilitic person previously operated upon."

2. Dangers to the *dental operator* from exposure to the syphilitic poison.

In the second division of this portion of our subject, namely, the dangers from syphilis to the operator in dental procedures, the number of instances on record is fewer, but they are very striking and well authenticated.

The first instance discovered was that of a dentist who reported his own case.¹ The inoculation took place on the middle finger of the left hand, above the nail, which was followed by constitutional syphilis. He could not trace the infection to any particular patient, but there could be no doubt that the poison came from mucous patches in some one's mouth, which lodged in one of the little cracks which so commonly come about the root of the nail.

Bumstead,² when speaking of the digital inoculation of accoucheurs, says that he has "known dentists to suffer in the same manner."

Neumann³ knew of a dentist who tore his hand on a sharp tooth while operating on a syphilitic patient, which injury was followed by severe syphilis.

Jonathan Hutchinson,⁴ in his excellent little clinical work on Syphilis, gives a plate of a well-marked circular, indurated chancre on the pulp of the finger of a dentist, which had been produced by a scratch on a patient's tooth.

Dr. Otis has recently, in a personal communication to me, related the following case, which is of peculiar interest, as it illustrates a method of infection in dentists which has not been previously noted. Mr. C., a dentist in large practice, applied for treatment with a chancre on the lips, accompanied with a general syphilitic eruption;

¹ *Boston Med. and Surg. Journ.*, vol. lviii. p. 88.

² Bumstead, "Venereal Diseases," edition of 1879, p. 482.

³ Neumann, *Allg. Wien. Med. Zeitung.*, 1884, p. 61.

⁴ Hutchinson, "Syphilis," London, 1887, plate ii., Fig. 2, p. 96.

his wife also contracted a chancre on the lip from him, with subsequent general syphilis. The infection was traced to a patient whom he had operated on, who had in the mouth a suspicious sore, claimed to be a "canker sore," but found afterwards to be syphilitic. The dentist was in the habit of occasionally holding instruments between the lips while operating, and the poison was conveyed thus to his lips by an instrument infected from the patient.

Although the number of these recorded instances of syphilis communicated in dentistry, which I have been able to find, after a very careful study of the subject during several years past, is relatively small, it is yet quite sufficient to establish the fact that such infection does occasionally take place, and to place us on our guard against such accidents in future. Undoubtedly but few of the cases occurring have ever found their way into print, and it is possible that when special attention has been called to the subject many more of them will be recognized and reported.

Having now considered the clinical basis on which rest the grounds for believing that there are dangers arising from syphilis in the practice of dentistry, we will examine the modes in which this accident can arise, and then consider the means for preventing the occurrence of this sad event.

Two methods of the non-venereal transmission of syphilitic virus are recognized, namely: First, the *direct*, and, second, the *indirect*.

1. *Direct syphilitic inoculation.*—In the first instance the poison is transferred directly from one individual to another, either through already existing wounds or in those occasioned at the time. The number of recorded cases of the communication of syphilis by kissing is now very great; hundreds can be found in literature, and I myself have seen over thirty cases of chancre of the lips. Infants at the breast of syphilitic nurses frequently acquire the disease, and breast-drawing by adults has given rise to numberless cases. In several series of instances syphilis has been both acquired and given by the application of the tongue to the eye to remove foreign particles and to heal disease; the poison has also been acquired and given in the process of wound-sucking, and other more rare modes of transmission which have been reported could be enumerated did time permit.

The particular method which is, perhaps, of most interest to us in the present connection is that of tooth wounds. The number of cases of this class which are on record is very great. Nearly all of them are from bites, usually intentional, and details of these need

not be presented here. There are also a number where the infection has taken place from a blow on the mouth, the knuckles being wounded by the teeth. The first of these tooth-wound cases was observed near the beginning of the century by Boyer,¹ but not reported until 1840 by his son. Since that time a number of observers have recorded cases, some of whom have each seen several. Thus, Gamberini² saw three cases, C. Pellizzari³ three cases, Van Harlingen⁴ five cases, Lavergne and Perrin⁵ five cases, Lesage⁶ three cases, Finger⁷ four cases, and Jonathan Hutchinson⁸ three or four cases.

In this connection may also be mentioned the fact that surgeons have repeatedly been inoculated in wounds occurring accidentally during operations on syphilitics, as also in other wounds when examining those with the disease.

When we consider the relatively large number of physicians and surgeons who have become thus accidentally inoculated in the discharge of professional duties (and I myself have seen at least seven or eight cases), the only wonder is that the accident does not occur oftener to dentists, whose fingers are continually bathed in the buccal secretions, often from mouths with active and intensely contagious syphilitic lesions.

Syphilis is rarely communicated to the patient in dental operations by the direct or immediate method of contact, although the cases of the communication of syphilis by tooth transplantation, already referred to, were probably by the direct method, the poison being undoubtedly carried directly in the transplanted tooth from a syphilitic to a healthy person, as the tooth was then inserted quickly after its removal.

It would also be possible for a dentist with an unrecognized chancre on the finger, in an early stage, to communicate the poison directly to a patient's mouth, as in the case of midwives, already mentioned; but no such instance has been found in literature.

2. *Indirect syphilitic inoculation.*—The second, indirect or medi-

¹ Boyer, *Gaz. Méd. de Paris*; Behrend's "Syphilidology," 1841, iii. p. 822.

² Gamberini, "Gior. ital. d. mal. ven.," 1878, p. 866.

³ Pellizzari, "Gior. ital. d. mal. ven.," 1882.

⁴ Van Harlingen, *Phil. Med. Times*, 1884-85, xv. p. 80.

⁵ Lavergne et Perrin, "Ann. de Derm. et de Syph.," 1884, 2d series, v. p. 882.

⁶ Lesage, "Chancre par morsure," *Thèse de Paris*, 1885.

⁷ Finger, "Die ven. Krankheiten," 1886, p. 14.

⁸ Jonathan Hutchinson, "Syphilis," London, 1887.

ate, method of contagion is that which usually takes place in cases where the disease is transmitted during the operations of dentistry, and, indeed, in a very large proportion of the cases of syphilis innocently acquired.

Time and space would fail to tell of even a small share of the methods of mediate contagion of syphilis which are scattered throughout literature, but a brief statement of some of the principal modes by which it has been observed to be conveyed innocently from one person to another may aid us in understanding how the accident can occur in connection with dental operations.

As is well known, various household utensils, such as cups and drinking-vessels, spoons, tobacco-pipes, etc., have been the means of spreading the disease to hundreds of cases. The glass-blower's pipe has also caused a number of small epidemics, and cases have been traced to the assayer's blow-pipe, whistles, musical instruments, toys, pencils, pins, tack-nails, thread, paper-money, coin held in the mouth, etc. Of instruments used about the mouth, laryngoscopes and tongue-depressors are peculiarly liable to transmit the disease, but the only instance found is a case reported by Jumon,¹ where a paper-cutter used to depress the tongue gave rise to syphilis. The cases traced to the use of the Eustachian catheter have been already mentioned.

Syphilis has also been conveyed by means of various fabrics, and a number of striking instances are on record where towels and napkins have transmitted the disease. An interesting case is given by Leloir,² where syphilis was communicated by means of a handkerchief.

Of peculiar interest are the cases on record, of which there are a number, where the disease has been transmitted by means of a tooth-brush. This was first observed by Blumenbach³ in the last century, and later by Baxter,⁴ and also by Bumstead and Taylor,⁵ and more recently Haslund⁶ has reported a similar case. Knight⁷ has also recorded a case, seen by Bumstead, where a lady received a chancre of the tonsil apparently by means of tooth-powder, her

¹ Jumon, *Thèse de Paris*, "Syph. ignoræ," 1880.

² Leloir, "Leçons sur la Syph.," Paris, 1886, p. 60.

³ Blumenbach, "Bibliothek für Aerzten," lii. p. 197.

⁴ Baxter, *Lancet*, May 31, 1879.

⁵ Bumstead and Taylor, "Path. and Treat. of Ven. Dis.," Phila., 1879, p. 482.

⁶ Haslund, *Monatshefte für prakt. Dermat.*, 1886, p. 466.

⁷ Knight, *New York Med. Journ.*, 1884, p. 662.

syphilitic nephew dipping his brush into her box when cleaning his teeth.

It is understood, of course, in all these instances that the various objects served as a medium to convey the dried syphilitic secretion which adhered to them directly to the tissues of the individual who became infected, and it is readily seen how, unless precautions are exercised, the various implements and articles used in connection with dentistry may very easily become likewise the bearers of syphilitic virus.

It is not possible always to determine exactly upon which instrument, or in what manner, the poison is conveyed, but the preceding instances which have been cited show, on good authority, that the infection did take place in some way in connection with and in consequence of dental operations.

The agents and objects which may become the conveyors of the poison are as numerous as the implements and articles which may come in contact with the mouth in dental manipulations. For convenience these may perhaps be grouped in three or four classes, as follows: 1, instruments proper; 2, napkins; 3, rubber dams, wedges, dental floss, etc.; and, 4, plaster, rubber, etc., used in connection with the making of artificial teeth and sets.

Among instruments the only one plainly shown to have communicated the disease is the forceps, in the case related by Dr. Roddick, in which the site of the extracted tooth, where the gum was torn by the forceps, became a syphilitic ulcer, the seat of the chancre or primary sore of syphilis. But it is readily seen that the instruments used in excavating and plugging may also become infected, while there is peculiar danger in such instruments as files, burrs, and drills, where there are many depressions difficult of cleansing which may receive and retain the virus. Napkins and towels may convey the poison, as has been shown, while rubber dams, if used a second time, would very readily give infection from their prolonged contact with the soft parts. The same is true of wedges, a portion of which is often used for different patients, as also thread, ribbon, or dental floss passed between the teeth. The different workmen in a furrier's shop were once infected¹ from a thread passed between them and bitten off. My scanty knowledge of the process of taking casts and preparing and fitting artificial teeth does not permit me to speak in regard to any dangers arising from this, but I should judge that possibly accidental infection

¹ *Arch. f. Derm. u. Syph.*, viii. 660.

might occur in this line of work, perhaps quite as unexpectedly as it has happened in connection with other branches of dental practice.

We come, finally, to the most practical and important part of our subject,—namely, the prophylaxis, or prevention of the occurrence of this most unfortunate accident, the transmission of syphilis in the practice of dentistry. It may be somewhat out of place in the presence of this Society, including, as it does, many of the best elements of the dental profession in this city, to urge the simple matters of precaution about to be mentioned; but, as some may not heretofore have recognized the immense importance of the matter, it is best to err on the safe side, and to present briefly and clearly the precautions which seem to be indicated from what we know of the nature and virulence of the poison of syphilis.

As before mentioned, the virus or contagious element comes in liquid form from a chancre or a moist, exuding surface, or, more rarely, with the blood itself, from a fresh wound. The secretion is very sticky and adherent, and when dried on an article forms a delicate coat, which could hardly be perceived. Nothing is known in regard to the viability of the virus, or the length of time during which it may retain its actively contagious character, but from many instances in the various conditions of life and in medical experience, it would seem that, under proper circumstances, it retains its vitality and activity for some considerable period longer than that possessed by the somewhat similar virus of vaccine. Days, weeks, or perhaps months after an instrument or article has become infected, it may again give off the poison and produce inoculation. Simple washing will not destroy the poison, although it may so dilute it that it becomes innocuous.

There are, however, several elements which are destructive to the life of the syphilitic poison, and these are heat and cold and the so-called disinfectants, antiseptics, or germicides. Cold can hardly be utilized practically, as a sufficiently low temperature for a requisite length of time would be difficult to maintain. Heat, however, may readily be employed in a thoroughly efficient manner, and is undoubtedly the very best means for destroying contagious principles. Inasmuch as dry heat, as in a flame, would injure instruments, as to their temper, the desired results are best obtained by means of moist heat, obtained in boiling water. Instruments and other articles placed in a vessel, and then subjected to vigorous boiling for half an hour or so, may be considered absolutely freed from any power of conveying contagious matter.

Various chemical substances are also capable of destroying the virus when efficiently used; prominent among these stand bichloride of mercury and carbolic acid. The mercurial salt has its disadvantages, both from its poisonous nature when in strong solution, and also from its corroding action on some metals. Carbolic acid, therefore, remains as the best of the two; and, indeed, when properly used, answers all the requirements of the case. But one must not be deceived by the odor, and be led to use a too weak solution, for it is questionable how serviceable the high dilutions used in antiseptic surgery are in overcoming such a poison as syphilis. The strong acid certainly destroys it, and a safe method is to dip the instruments in a ninety-five-per-cent. solution, wiping or scrubbing them afterwards. A much weaker strength, possibly even a ten-per-cent. solution, would probably be effective if they were left a considerable time in it and then thoroughly washed. I will not take your time in discussing other disinfectants, but only wish to impress the fact that not only for ordinary cleanliness, but also and particularly to avoid the possible danger of infection, too great care can hardly be spent in rendering instruments and everything pertaining to dental practice as absolutely clean as thought and labor can possibly make them.

Files and burrs are particularly liable to catch and hold the poison of syphilis in their fine serrations, and as they are also peculiarly liable to wound the soft parts they may readily become means of contagion. Also the various articles connected with polishing the teeth are dangerous if not properly cared for. I well remember more than one dentist, in times past, polishing my own teeth with a bit of wood dipped in pumice-stone, which wood had evidently been used for former patients. Rubber dams and wedges can, of course, be readily disinfected in strong carbolic solutions, and napkins are rendered aseptic by boiling.

In regard to the personal prophylaxis of the dentist against acquiring syphilis in dentistry little need be said. The careful guarding of fresh wounds and thorough cleansing of the hands, and immediate sucking of any wound made during operations, will generally suffice to prevent the untoward event. "Forewarned, forearmed" applies well in regard to all the dangers from syphilis in dentistry. If the danger is thoroughly well known and appreciated, half the battle is won.

The question here arises, how far the dentist should be acquainted with syphilis, so as to be able to recognize it and avoid its dangers. Undoubtedly it would be most desirable that this knowledge should

be obtained, but, unfortunately, a practical acquaintance with syphilis is somewhat difficult to obtain, except after considerable clinical experience in this branch of medicine. But it would certainly be extremely desirable that the mouth lesions should be known to dentists so as to be recognized, and this would be a fitting subject for the consideration of instructors in dental colleges.

A word may be added in regard to the duty of the physician in charge of syphilitic cases, when the patient may desire dental work to be performed. Should he prevent the patient from having the work done, and from thus exposing others, or should he acquaint the dentist with the diagnosis of the case and warn him against contaminating himself and others? The latter question involves an ethical point as to how far the medical adviser is right in revealing the nature of a patient's disease to others, and is a difficult one to answer; for professional relations require secrecy, especially in such a complaint. But, on the other hand, it cannot be right to wittingly expose others to the poison of syphilis. My practice has been to warn the patient earnestly of the danger, and, as far as in my power, to prevent his having dental work done while in the infective period, and especially while there were mouth lesions present, frequently examining the mouth for this purpose. If he failed to heed my instructions I should feel justified in warning his dentist.

In concluding our consideration of the topic of the evening, I beg to add that I have by no means wished to excite unnecessary alarm, but only to present facts already well known and conclusions which must be accepted by all those acquainted with the subject. With the presence of such a disease among us, which often appears even in the best classes of society, it is well to recognize and understand the dangers which may arise therefrom, and to do our utmost to avert them. This, I trust, will be the result of the presentation of the subject which has been considered.

4 EAST THIRTY-SEVENTH STREET, NEW YORK.

LIMITATIONS IN TREATMENT AND FILLING OF ROOTS.¹

BY DR. J. A. BAZIN, MONTREAL, CANADA.

THE numerous articles that have appeared in our dental journals for some time past upon "Root Treatment and Filling" have caused me to doubt my experience and observation, and also with great diffidence to question the statements and almost dogmatic assertions of some of the writers.

More recently has this been the case in reading an article and discussion reported in the *INTERNATIONAL DENTAL JOURNAL* by Professor James Truman, wherein he presents such a picture of almost complete perfection that I am forced to ask myself, as well as my associates, Can he have the same kind of teeth and the same order of beings to deal with as come into our hands? Believing that he has, and giving him, and all others who claim such full success in this branch of operations, credit for far greater deftness in manipulation and skill than I possess, yet the effect upon me has been to take up this subject for consideration and try and deal with it in the light of the, perhaps, limited experience and tests that I am able to offer. The first proposition I shall try to establish is that it is far from being commonly possible to extirpate all the contents of the pulp-canals of all the three-rooted teeth while in their normal position in the human jaws. Nature is exceedingly fickle in the anatomy of the roots of the teeth, and I might go further and say in all the details of the human frame, but will only deal, at this time, with one special subject. In proof, I exhibit a few teeth, not selected, but in the order of their extraction, mostly of first molars, from patients under twelve years of age, also a few specimens presenting marked peculiarities in root formation, but whose crowns are of normal type.

Of the first group I have removed the crowns so as to have the freest access to the bifurcations of the canals that the drills and instruments might have no hinderance in passing to and through the foramen. Of course no such presentation would occur in an ordinary operation in the mouth.

¹ Read before the Union Meeting, Springfield, Mass., October, 1889.

The results of my attempts to open these canals have been the breaking of drills in a few, puncturing at the side of the root in more, and succeeding in but a very small number of cases in passing at the proper point, and when doing so the *débris* would almost always be left outside in what would have been the "apical space." Another circumstance in connection with this drilling of the roots, which to me seems very important, and which I wish to emphasize, is that the amount of *heat* evolved in penetrating any of the smaller canals must do injury to the connective tissue, as it often forced me to let go the tooth with my fingers, although the engine was moving at an exceedingly slow speed. If the drill chips accumulated in the least, *heat* was the result, and these chips must be removed in some way to allow the work to go on. Till the foramen is pierced, this *débris* can only be lifted out by the drill, and that imperfectly.

You will please notice that several of these lower molars, although being from such young people, have exceedingly flat roots and very minute canals, with a division in one root into two distinct branches of a very small diameter and obscure entrance from the pulp chamber.

No instrument can penetrate these canals, and to attempt enlarging them is so difficult that the larger part of the crown must be sacrificed, and if much increase of diameter is attempted, penetration at the side of the root is sure to occur.

My second proposition is that nature is as fickle in a physiological and pathological sense, which I shall endeavor to establish by citations from my own practice.

1. A young lady when about fourteen years of age fell upon the ice and struck with great force upon the superior central incisors, the dentine became suffused with blood pigment, and when the case came into my hands, about three years later, both teeth were blue-black. After attempting to bleach, I excised the discolored crowns and replaced them with Logan crowns. On doing this the left central canal was found free to apex, but the right was solidly filled with secondary dentine, as far as I had need to drill. Neither tooth had given any trouble yet. Nature had been capricious.

2. A young man, about twenty, robust and a noted gymnast, came to me with swollen face, and left eye almost closed. On examination I found left central, a perfectly sound tooth as far as decay was concerned, abscessed and discharging pus copiously from numerous openings. The history of the case is as follows: He was employed in a bank, and was directed to prepare a large amount of

silver coin for export, and in tying the parcels kept the end of the string between his teeth. The three-sided form of the package doubtless caused repeated jerks and jarring, the result upon the upper tooth being as I describe, the lower ones not being affected.

3. A lady in middle life presented a right superior molar, which had a fistula on the buccal side, with no cavity or discoloration observable. After she had borne the annoyance for some time, I removed the tooth and, upon examination, found complete ossification of the pulp and canals. (The tooth is now the property of Dr. Barrett, of Buffalo, who says it is the finest specimen he has ever seen.) Upon inquiry, I found this lady had been in the constant habit of cracking nuts and plum-pits upon every opportunity.

Again, a lower first molar was filled by Dr. Elliot, of this city, prior to 1855. I refilled it with same material, amalgam, a few years after; the pulp was then dead, as I presume it was at the first operation. No special effort was made to go beyond the pulp-chamber in cleaning or filling, creosote being applied. From that time till 1868 perfect peace reigned supreme.

In February of that year, patient became seriously ill in giving birth to a child without proper attendance, and very serious hemorrhage was the result, which was arrested by compress and plug. Within forty-eight hours the tooth described had the acute symptoms of alveolar abscess taking the usual course. (In this connection the question might be asked, Was this result one of those cases referred to by Dr. G. W. Black, where bacterial germs enter the circulation at a remote part and find fit conditions for multiplication?) Is it correct to say that that filling was a success by reason of the fact that for more than ten years it remained a useful member? I might weary you with additional evidence to uphold my proposition.

Cases are common of pivot teeth on the hickory peg, where the only treatment usually given was that of removing the pulp with a broach, enlarging the canal to the desired size, and then sending peg and crown to its resting-place to abide in peace for ten, twenty, and even thirty years. Not long since I removed four that had been in place for thirty-two years. Now, if this evidence is accepted, what ought the conclusion to be? Are there not limitations to our efforts to remove all the pulp from the roots?

I think it may safely be affirmed that only the single-rooted teeth can be well cleaned and filled, and even then much will depend on the locality of the cavity.

If it is declared *absolutely necessary*, the root to its apex *must*

be cleaned and filled to insure success, but even with this care many failures are inevitable.

Passing beyond the single-rooted teeth, difficulties multiply rapidly, such as flattened and bifurcated roots, tortuous, and curved in very minute points. If the cavities occur on posterior or labial face the sacrifice of a large part of the crown with a corresponding weakness must be the result to even reach the *entrances* to the canals. Often we have presented the second and third lower molars with pulp exposure, the cavity being below the margin of the gum either on the mesial or distal face, with a form of jaw that prevents a wide opening of the mouth, and on the superior jaw cavities of the lingual side.

Do the writers of the articles referred to intend to convey the idea that they remove all the *débris* to the apex of *each* of the several roots, and carry gold or cotton to their extremities?

Professor Truman, writing of the treatment of roots, uses these words: "The canal is thoroughly injected with peroxide of hydrogen as preliminary; this powerful oxidizer of organic matter prevents possible injury in cleaning out the *débris* of pulp tissue." Again, "The instruments used are passed through the alcohol flame," the "canal is then thoroughly washed with a certain solution, and when all odor of putrefaction ceases, the canal is generally considered to be ready for filling." Further on he says, "The canal is first closed at the apical foramen, at the shoulder, with either a small piece of cotton wet with carbolic, or better, if possible, with a small piece of gutta-percha, and chloride of zinc is then passed into the canal, to remain for several days." In the discussion of the paper some statements were made which, I think, would be modified under a cross-examination. I quote, and I believe fairly, for it would make this paper too long to make full extracts. Dr. L. G. Perry commends the paper in every particular. He uses gutta-percha points because it is possible to carry them to the end of the roots, and questions if it is not true, as claimed by Dr. Jack, that "the very small point of the canal can be filled as accurately with gold as with any other known means." Dr. J. Head "fills roots with cotton," but thinks there always is a strong probability that in molars the outer (?) portion of the apical foramen is unfilled. (Dr. Head seems to be the only one present at that discussion that hints at such possibilities.) Since this paper was prepared Dr. Head has an article in the October number of the *INTERNATIONAL DENTAL JOURNAL* referring to this same paper and discussion, in which he suggests that if they would perform the operations

in teeth embedded in plaster and have them dissected afterwards, they would, probably, be convinced of the truth of his statements.

Dr. Dwinelle is very emphatic; he "fills the roots thoroughly and usually with gold." In fact, with hardly an exception, it seems to be unquestioned by the members present that Professor Truman's position is tenable. As I said at the beginning of this paper, I feel great delicacy in criticising such a body of leaders in dentistry whose papers and opinions are read with so much interest, but will not such statements mislead and deter our young and even some of our older members in their attempts to deal justly by themselves and towards their patients? When failure to save a tooth, after all their painstaking, meets them, will not the question arise, Who is to be compensated, patient or practitioner?

The conclusion of the matter seems to me to be, that averages rule in this as in many other things. We can only do what we can with each individual case, cultivating our discernment so as to *know* the best for each; remembering that there are the conditions of locality, as well as of disease, that will render our most intelligent and earnest efforts only failures, or, at best, but temporary successes, since circumstances may render our work valueless in the weeks that are to follow. Another matter that seems to me to have its objectionable feature is the number of agents recommended for use in septic conditions, with the maze of doubt as to which of the twenty-five or thirty will be the best; the changing treatment that must arise if the future does not bring the expected result; and when the effect desired does come, to which shall credit be given; these all seem to declare that it were far better to have some definite series of experiments made. My experiments seem to demonstrate that it is not often that the *débris* of the drill can be blown or washed out of the canals if the apex is not well open, and if open much of the contents will pass beyond the root, but in such cases septic treatment ought to correct any injurious effect. I indulge the hope that what I have here written may be received in the kind spirit in which it is given, and that each one may be stimulated to increase his successful averages.

Since writing the above article I have had some tubes prepared, partly filled with bone-dust, which I would like to see washed out or blown away by any of the means or instruments now used in the mouth. These tubes present a smoother and more perfect surface than those made in the canals, and if these cannot be cleaned how can the teeth?

A DELICATE OPERATION TESTED BY TIME.

BY HENRY N. DODGE, M.D., D.D.S., MORRISTOWN, NEW JERSEY.

IF the case which I wish to describe and record is not unique, it certainly presents features that are rare.

In the spring of 1879, while practising in New York City, a gentleman, aged forty-one, consulted me about his superior incisors, which were crumbling at the cutting edge. This, he said, had been going on since an attack of "nervous prostration" of eight years duration, accompanied by aggravated dyspepsia, acidity of the stomach, and acid saliva.

The patient was then sufficiently recovered to attend to business. Upon examination, I found that not only had the cutting edges of the four incisors been much broken down, but that the enamel was also eroded or dissolved from the entire lingual surfaces of the four incisors (excepting a small part of the right lateral). Most of the lingual surface of the left cuspid was stripped of enamel, and the right cuspid had also suffered from the same cause, but to a slight degree only. These denuded and smoothly-polished surfaces were studded here and there with bosses of gold, the corners of several small proximal fillings of soft gold standing out in bold relief. So soft indeed were these fillings that, had the polishing of the dentine resulted from any form of friction, they would have been worn down long ago to the common level. The impression conveyed to my mind on first examining these teeth was, that the point of the tongue bathed in some solvent had habitually swept over the lingual surfaces of the oral teeth, at first softening and then removing the disintegrated enamel. The idea also suggested itself that lemon-sucking frequently indulged in might have caused such a peculiar result, but this suspicion was groundless, as inquiry proved that the patient had no such habit. On the contrary, alkalies had been long and freely used in the mouth to neutralize the acidity of the saliva. Whatever may have been the etiology of the case, the treatment was as follows: Rubber dam being applied to the incisors and forced well under the gum so as to effectually exclude all moisture, a narrow groove was drilled along the cutting edge of the right central and extended around the lingual surface of the tooth as near as possible to its periphery. Several similar grooves were next cut across the lingual surface parallel with the long axis of the tooth, but not connected with the circumvallating groove.

The grooves were made as deep as circumstances would permit, and were slightly undercut. They were then carefully filled with Williams's cylinders of cohesive gold foil, thoroughly condensed by hand-pressure. When the grooves were all filled, gold was built across from one groove to another until all of the interstices were bridged and the polished surface of dentine entirely covered. This golden surface was then built upon until a sufficient and uniform thickness was attained. The gold upon the cutting edge was carried over a short distance upon the labial surface and also built down sufficiently to give the tooth a somewhat natural outline, but not enough to endanger the stability of the work or to disfigure the mouth with an unpleasant gleam of gold. The gold extended also into those small proximal cavities from which the remains of soft gold fillings had been removed. The whole was then carefully finished, making a strong but delicate armor for the defenceless tooth.

The operation was repeated the next day upon the left central, and at subsequent sittings both laterals were similarly treated. The pulps of these teeth were alive, but that of the left cuspid was dead. The root of this tooth, therefore, after treatment, was filled with gutta-percha, the cavity of decay with gold, and the whole of the lingual surface sheathed with gold in the manner before described. The appearance of the lingual surfaces after treatment is shown in the accompanying figure.



I have recently examined these teeth and replaced some smaller portions of gold about the cutting edges and one corner of a lateral. Once before, since the primary operation, were some very slight additions of gold needed, but, as a whole, the work has remained intact for eleven years. During this time the teeth have been subjected to the severest tests of mastication, the patient being a New York business-man, now in robust health. Time is the crucial test of dentistry, and it has proved the usefulness and permanence of this operation.



ORIGINAL APPEARANCE.



APPLIANCE IN POSITION.

AN INTERESTING AND RARE CASE.

BY L. P. BLAIR, D.D.S.

Miss T., a young lady, twenty-six years old, came to me with a very peculiar condition of face. The portion which extends from median line of lips to angle of the mouth and from infraorbital canal to mylo-hyoid ridge, was entirely gone. She desired to know if I could do anything for her.

The history of the case is this. Up to the age of six years she was perfectly healthy; at that time she was taken with typhus-pneumonia. The physician in attendance gave calomel and quinine, forty-six hours after which a blue spot was noticed on the inside of the cheek; the next morning it was visible on the outside of the face, and before night the portion of her face extending from the eye to condyle of jaw along the mylo-hyoid ridge and median line of face developed a line of sloughing, and in a few hours entirely dropped out, exposing the bones. The temporary teeth dropped out and the motion of jaw ceased and became ankylosed.

The young lady had had two attempts made with plastic operations, both of which were only partially successful. When she applied to me the lateral, canine, and two bicuspid teeth, in the left superior maxillary, had been removed in order to allow her to eat, drink, and articulate. For twenty years she had lived eating through that small aperture.

She wanted to know if something could not be done to hide that ugly gap. I told her I thought it possible. First I took a plaster cast of the face and moulded paraffine and wax upon it until I had the face as near perfect as I could get it. I then took a cast of the face and obtained my die; I next placed sheet-wax upon this and forced it into position, thus getting a skeleton form; then trying it upon the face, I found it to be correct. I subsequently made two crowns to fit the lower bicuspid and placed them in position; then two bands to fit upon the crowns in the form of spring clasps, leaving an arm from each extending through the wax form. These arms I securely fastened and removed the form with clasps in position. Having now the model I desired, I invested in plaster and proceeded as in plate-work. I rough-finished and sent to artist to be painted. The artificial portion of the face was made of pink and brown rubber painted. I simply filed off the outside, polishing thoroughly the inside.

The result is, the young lady has a false part that so nearly

resembles the other side of the face that none but the very observing would notice any difference. This fixture obstructed the aperture for feeding; to obviate this difficulty I removed the right centrals, laterals, and canines in upper and lower jaw, thus allowing her to eat, drink, and articulate without removing the appliance. She has now been wearing it five months with perfect satisfaction. The illustrations show the face before and after the operation.

AN INTERESTING OPERATION.

BY GEORGE W. WARREN.

Mrs. M., twenty-eight years of age, presented herself for treatment at the clinic of the Pennsylvania College of Dental Surgery. She had worn an upper artificial denture for a number of years, which had been comfortable up to a few weeks prior to her visit to the college, when, as she expressed it, "a piece of her jaw-bone commenced to work through." Upon examination, it was found that at least an inch and a half of the superior maxillary bone was necrosed and entirely denuded. The disease was, from the family history, evidently the result of a scrofulous affection, and had attacked the bone at the median line and was following the ridge over the left side of the mouth. It was decided to remove the necrosed portion of the jaw at once, though nature had made no effort to separate it from the healthy bone, except at the median line. The operation was performed before the class by Dr. Warren. An incision was made in the soft tissue, which was laid back until healthy bone was reached; a deep groove was then cut on all sides of the necrosed portion,—the "New Cord Engine" being employed for this purpose. This was followed by a skilful manipulation of the chisel and mallet, after which the bone was removed with the forceps. When it was found that the left cuspid tooth was lying horizontal, on a line with the ridge, in the body of the healthy bone, this was also removed; the edges of the bone were then smoothed with the chisel, and the cavity, after being thoroughly cleansed, was packed with iodoform gauze, and the patient directed to use listerine daily as an antiseptic mouth-wash. This was continued for about a week, when the gauze was removed, the cavity cleansed with bichloride of mercury, and the edges of the soft tissue, which had been previously refreshed, were brought together and united by means of a stitch. The embedded tooth had without doubt induced the disease in this locality.

Reports of Society Meetings.

AMERICAN DENTAL ASSOCIATION.—THIRTIETH ANNUAL MEETING, EXCELSIOR SPRINGS, MO., AUGUST 4 TO 8, 1890.

Tuesday Morning's Session.

THE Thirtieth Annual Meeting of the American Dental Association was held at Excelsior Springs, Mo., August 4 to 8. The convention was called to order at eleven o'clock Tuesday morning, Dr. M. W. Foster, of Baltimore, Md., presiding. The sessions of the convention were held in the Elms Opera-House. Other officers present were Dr. A. W. Harlan, of Chicago, First Vice-President; Dr. J. D. Patterson, of Kansas City, Mo., Second Vice-President; Dr. George H. Cushing, of Chicago, Recording Secretary; and Dr. A. H. Fuller, of St. Louis, Mo., Treasurer.

After the call of the roll and the adoption of a resolution dispensing with the reading of the minutes, Dr. Gardiner, of Chicago, offered the following preamble and resolution:

"WHEREAS, There is to be a World's Columbian Exposition in Chicago in 1893; and,

"WHEREAS, In consequence of the fact that the choicest products of the world are to be there displayed, it is expected that citizens in large numbers of all civilized countries will be gathered together there for the purpose of seeing these exhibits; and,

"WHEREAS, The time of the Exposition will be an opportunity for a great meeting of the dentists of the world; and,

"WHEREAS, It is believed that a great advance in science and the practice of dental and oral surgery would result from a meeting of the dentists of the United States with those from foreign countries who might then be visiting this country; and,

"WHEREAS, It is desirable that any meeting then held should be at the instance of the American Dental Association and the Southern Dental Association, and organized by a joint committee by them appointed; therefore, be it

"Resolved, That the president of this association appoint a committee of five to confer with a like committee, appointed by the Southern Dental Association at its last meeting, upon this subject, and that this joint committee have the power to fill all vacancies, and shall add to its membership either one, three, or five more members, as it may deem advisable; and when this committee is so completed it shall be clothed with full power to take such action as it in its

judgment may deem best for creating an organization for the purpose of holding a dental meeting in Chicago in 1898, which the reputable dentists throughout the world shall be invited to attend, and that any action that this committee may take in the premises shall be final and binding."

Dr. Alport, of Chicago, denounced this as a discourtesy to the Southern Dental Association, whose committee was then on the floor awaiting an opportunity to submit a similar resolution. Dr. Alport favored co-operating with the Southern Association in this matter, and he would not consent to this method of procedure. He moved to lay the resolution on the table to give the committee referred to an opportunity to perform its mission. Dr. J. H. Thompson, of Topeka, Kan., moved the adoption of the resolution. Dr. J. A. Swazey, of Chicago, moved a substitute. Dr. James Truman, of Philadelphia, moved a reference of the whole subject to a committee of three, with instructions to report. Dr. Stockton, of New Jersey, wanted the matter settled without delay. Dr. Rhein, of New York, objected to the plenary powers proposed to be conferred on the committee by the resolution, and favored the reference of the subject to a committee, with instructions to report. A motion ordering the previous question in order to close the debate was voted down. Dr. Cushing, of Chicago, offered a resolution to table the whole matter temporarily in order to afford the committee of the Southern Association the opportunity to present the resolutions adopted by that body which are in substance about the same as that offered by Dr. Gardiner. Later in the morning session, Dr. Carpenter, of Atlanta, Ga., chairman of the committee appointed by the Southern Dental Association, was called upon and submitted the resolutions of that body. The resolutions were read by the secretary, Dr. Cushing, and unanimously endorsed, except that Dr. Rhein, of New York, still adhered to his objections to the absolute powers to be granted to the committee. The president was instructed to appoint a committee of five from the American Dental Association to co-operate with the committee from the Southern Association.

A communication from the S. S. White Manufacturing Company of Philadelphia created considerable surprise. The company has been printing the reports of proceedings in the *Dental Cosmos*. Last year Dr. W. A. Barrett, of Buffalo, in discussing dental education, attacked the S. S. White Manufacturing Company and denounced in bitter terms the partnership carried on by the society. Dr. J. N. Crouse, of Chicago, introduced a resolution expressing confidence in the S. S. White Company so far as the publication of

the reports is concerned, and denying that the society shared the views of the member from New York State. Dr. J. R. R. Patrick, of Bellevue, Ill., thought that the society as a scientific body ought to be self-reliant, and insisted that it was perfectly able to publish its own reports. After a spirited discussion the communication, which was a lengthy one, dealing with the history of the arrangement under which publication of the transactions is made and pointing out the benefits that the association derives from the contract, was referred to a committee consisting of Drs. W. X. Suduth, W. H. Smith, and George S. Cushing.

President Foster then delivered his address, Vice-President Harlan being in the chair. The points of greatest interest to the dentists of the country are given. After a brief and formal introduction President Foster said,—

Among the many subjects to be presented it has occurred to me that it would be well to formulate a plan of action in regard to making the State dental laws uniform.

I would suggest that this body take into serious consideration the advisability of a uniform set of laws regulating the practice of dentistry in all of the States. It is perfectly obvious that we are dealing here with a subject of much importance and upon which a great variety of opinion exists. The rights, the best interests of our profession, the colleges, and the newly-graduated students are all involved. The public welfare, as well as the interests of our profession, demands such a protection as will eventually destroy all ignorant charlatanism and free the people from malpractice and indifferent treatment. We are all aware of this. We are all in favor of it. Colleges and young graduates alike demand our protection.

We must admit that our colleges and associations have made dentistry what it is to-day. As in the past so in the future. We must look to those institutions as our best friends and auxiliaries to aid and to push forward the work that is to be accomplished.

From a hasty analysis of our State statutes we find that our laws regarding the practice of dentistry in the different States are by no means uniform in their requirements. This is not as it should be, and if continued will bring on a conflict between the associations of the several States which will weaken if not destroy our national existence as a dental profession.

1. We have laws which demand that both graduates and non-graduates shall be examined by State boards before admission to practice.

2. We have laws recognizing the holders of the certificates of

reputable schools. These permit the holder to practise to the exclusion of all others desiring this privilege.

3. We have laws demanding examinations, but allowing this favor to graduates only.

4. We have laws demanding the examination of dentists whether graduates or not, with exceptional clauses in favor of the holders of the medical degree.

In regard to the first mentioned,—that is, laws which examine all alike, whether graduates or not,—it would seem at first glance without serious objection. It seems fair to judge an applicant for the privilege of practice by what he knows. But is it fair to place a man who has no college training on the same platform with one who has enjoyed at much expense of time and money this advantage? No medical board that I know of permits this, and if these laws were universally adopted, would it not effect seriously the interests of our colleges? What would the members of our profession who have so earnestly advocated the extension of college preparation and training have to say to this, particularly when the colleges in obedience to their suggestions have already lengthened their time of preparation from one to three sessions?

Let us look a moment at the workings of such a law. I know that in one of our States a would-be student of dentistry was advised, as his means were limited, that it would be much better for him to prepare himself at home and go before a board of examiners and thereby save himself much time and money, since at last, if he should go to college and graduate, he would be subjected to the same ordeal. This looks like progressing backward.

In another State, the laws of the State dental association require that a member shall take, as pupils to prepare for college, only those who will remain under the preceptorship two years. This added to the three years required by the college would aggregate five years of preparation prior to admission to practice. Under such circumstances, do you not believe that the average man would decide to prepare himself at home and let the college go? These State laws make no discrimination in regard to previous preparation. If the applicant is twenty-one years of age and can pass the examination, he is permitted to practise.

Again, does not this forced examination of college graduates show to the whole world an implied distrust and want of confidence in our own schools? Even foreign countries recognize some of our degrees. Is not this a national degradation? And is it not calculated to injure and destroy our own colleges.

Second, we have laws which recognize the diplomas of all reputable schools and allow only such the privilege of practice. It seems to us that laws like these evidently take the ground that a college training is imperatively necessary to a practitioner, and forbid all other consideration. They do not suppose it even possible that a practitioner can be qualified for practice in the office of a practitioner.

Third, laws which demand examinations for all graduates, but exclude all others from this privilege. Laws like the last quoted concede, too, that the graduate alone is competent and fit to practise. In this way they aid and encourage the colleges, but they throw a wet blanket on them by the publication to the world that we have not a single college in the United States, like Cæsar's wife, above suspicion, no dental diploma which can be trusted and relied upon, thereby destroying the reputation, the prestige, and the value of every degree in our country. It does seem proper that the student who has spent so much time and money in procuring his degree should have some protection and exemption from the torture of further examinations. Under these laws there is no respite or relief for him; no matter where he settles, this ordeal awaits him; if he passes the examination in one State, and for reason emigrates to another, the same ordeal of torture is inflicted. I understand perfectly that the response from those favoring the laws, in reply to what I have said, will be that if the college graduate is not tested by such examinations the colleges would be under no restraint and would cease possibly to be so exacting in their requirements, and make, in a great many instances, improper graduations. There is much reason in this. But is a State board any more immaculate in its decisions than are the college Faculties? Is the State board any less human? Is it more competent? Is it always appointed because of competency and integrity?

And is there not some way by which this matter can be disposed of alike just to all concerned and interested? I respectfully urge that this question be discussed and carefully considered. We ought from the general intelligence of this Association to have a plan suggested and adopted that will insure the public, the profession, the colleges, and their graduates justice and reasonable satisfaction. We can then announce to the world that our college degrees, both at home and abroad, deserve the confidence of all.

Further, suppose that the State boards in the States where a dental college or colleges exist be required with their Faculties to conjointly examine thoroughly, both practically and theoretically,

all candidates for graduation, and when a student has been subjected to such examination and found worthy and deserving, let the diploma be signed by the president and secretary of the board, together with the Faculty, and let such diploma be accepted in every State of the country. Would there be any reason for one State board rejecting the work of another? The public and the profession, through the selection of the members of such boards, ought to be satisfied. The colleges would, I think, rejoice in being relieved of the responsibility and unpleasant duty of turning down incompetent men, and I believe the students would be satisfied. They do not so much dislike examinations as they do the repetition of the examinations. Dr. Riggs used to say that dentists were like bumble-bees, always biggest when first hatched, and they felt a sense of mortification to be obliged to submit to an appearance before a board of examiners.

President Foster also suggested the propriety of petitioning Congress at this time to appoint from the dental profession representatives to the army and the navy of the United States with suitable rank and pay. He said, Congress at this time appears to be in favor of building such a navy as will properly represent this great country. Does any gentleman think that in these progressive days a ship, with her crew going perhaps on a long cruise, effectively manned and officered, is fully equipped without a representative of our profession on board? Is it not inhumanity to man to send a ship's crew off in such a condition, where nothing is left for the poor unfortunate better than to be turned over to the tender mercies of the surgeon, who knows nothing of dentistry beyond the extraction of teeth, and where no one in case of a fractured jaw is capable of applying the interdental splint to relieve the sufferer? We think at this time, especially, that the public would enthusiastically endorse such action on the part of Congress. I need not dwell upon this subject. You all recognize the necessity for action in this matter, and the times are, we think, ripe for it. Of course in this, as in every other effort to effect uniform legislation in the States regarding the practice of dentistry, we should invite the aid and co-operation of the Southern Dental Association and all State Faculties.

I suggest also for your consideration the propriety of endorsing and recommending to the proper authorities the use of models taken from impressions of the mouth in the identification of criminals. I think this would be perhaps a very reliable means of identification, and those models might furnish a very valuable source of study to

the ethnologist and physiognomist. In Paris, I am told, they take impressions of the thumbs, and have found this quite a useful method of identification. You are well aware that but for a set of artificial teeth the remains of the murdered Dr. Parkman would not have been identified. You may also be informed that in one of the most notable murder cases on record, in which an attempt was made to defraud the insurance companies out of a large amount of money, the identification of the remains was by the teeth. A skull was presented in court represented to be the skull of the missing man, who was at that time still alive. It was proved that the supposed deceased had an excellent set of teeth. The skull showed the loss of the anterior teeth and absorption of the sockets. Complications arose making it necessary for those in the plot to murder the man to escape imprisonment themselves. This was accomplished, and, having the experience of the former trial in view, an effort was made to knock out the anterior teeth, which was partially successful, but the roots and portions remaining showed that it had been of recent occurrence. This, with the remaining teeth, was the positive means of the identification of the decomposed body.

President Foster recommended the establishment of a head-quarters, dental museum, and library of the Association in the capital of the country. There the archives can be kept safely. Such a museum would grow very rapidly, and in time become very valuable, and redound much to the credit of the Association. We could by the appointment and election of members resident in Washington have always at the head-quarters a permanent officer, who could take care of the museum and library and represent us to foreigners. Our officers are constantly changing, as well as the place of meeting, and a person in a foreign land desiring correspondence with this body would always know where and to whom to address his communications. I feel confident that the government, if properly approached, would willingly aid in this work,—perhaps furnishing rooms in the Smithsonian Institution. The medical department could give us great assistance, and we would soon have at little expense to us something of which we might all feel proud. Probably, too, after a short time the government would offer us, through this channel, great advantages in the study of ethnology and microscopy. There are a large number of possibilities depending on this movement, and I would advise the appointment of a committee to examine into the probable value and success of such an undertaking, and, if favorably considered, to report at the next meeting a plan for carrying it into effect.

The question of a preparatory dental education has been discussed in the meetings of our associations, both orally and in writing, by leading men in the profession, and yet it is not solved. As the better method many advocate a higher education than is now required for admission to the schools. This prevents men of natural capacity from becoming members of our profession. There are many who consider a good English education sufficient. The colleges have agreed to an increase in the length of the sessions, and have endeavored to meet the demand for the more thorough preparation of students before granting a diploma. Does this increase in time bring about the desired reform? Are not some men by educational advantages and manual dexterity more competent and better fitted to practise our profession than others with less qualifications? Is there not a great truth in the language of Professor Huxley,—“Handicap by time one man to the capacity of the other.” The broader and more liberal the general education the more liberal and broad are the views of the possessor, and from this stand-point such a one might reflect more credit on our profession than one of less accomplishments. The natural endowments and aptitude of the less educated man in a final examination, would prove that other qualities fit him also for our profession. From this stand-point a dental education commences when the person commences the study of dentistry in the office of a preceptor, or in some reputable school. This general education either qualifies him for this, or it does not. This is plain, I think. Then it is not a question of qualification at all, whether it be one or five years or original capacity.

. In closing, President Foster complimented the Association upon the work of the past and the prospects for the future. He spoke of the bright lights of dentistry called from labor to reward, and urged that a scientific body is not the place for selfish ambition or personal aggrandizement. He held that the absorbing desire of all should be to rank dental science among the benefactions of mankind.

(To be continued.)

UNION MEETING OF THE CONNECTICUT VALLEY DENTAL SOCIETY, THE NEW ENGLAND DENTAL SOCIETY, AND THE CONNECTICUT STATE DENTAL ASSOCIATION, AT SPRINGFIELD, MASS., OCTOBER 23, 24, AND 25, 1889.¹

(Continued from page 491.)

EVENING session called to order at eight o'clock. President Brackett in the chair.

The discussion of Dr. J. A. Bazin's paper on "Limitations in Treatment and Filling of Roots" (for paper see page 522) was then opened by—

Dr. Maxfield.—As I have read over Dr. Bazin's paper and examined the specimens sent with it, I can perhaps speak more understandingly than those who have not yet had this opportunity. I think Dr. Bazin cannot have had much experience with the "Gates-Glidden" or "Morey" drills, or of "peroxide of hydrogen," or else he would not have seemed to have met so many difficulties. In the first place some of the teeth here presented have very tortuous roots: now no one would ever attempt to claim that the canals in such roots can be thoroughly cleaned. I do not doubt but what most of the failures that we do here in root-treatment are the result of this tortuous condition. Some of these specimens show a bend almost at right angles just below the apex of the root. If we thoroughly understand how to use the peroxide we will not have much trouble with these cases, for it will penetrate everywhere; and then, if we are unable to get all the *débris* out of the canals, we can so thoroughly saturate with an antiseptic that there is not likely to be any trouble from it. As to drilling out the canals, I always do that, using the drills mentioned. For molars I use the right-angle attachment, and have had some drills made for me a quarter of an inch shorter than those found at the depots. While drilling out the canals I keep the parts saturated with the peroxide, constantly withdrawing the drill to keep it clean. I am not, therefore, troubled with the dust remaining in the canals, as the writer seems to be. The weakness of the walls of the cavity I regard as of secondary consideration. The first question always is, "Is it best to attempt to save the tooth?" In ninety-nine cases out of a hun-

¹ Reported for the INTERNATIONAL DENTAL JOURNAL by Geo. A. Maxfield, D.D.S., Holyoke, Mass.

dred this will be answered affirmatively. Then we must sacrifice any part of the tooth that prevents our gaining access to the canals. I never attempt to treat a canal by working around a corner, but always cut away so as to gain free access. In filling the cavity we can strengthen the walls by using cement, filling it more than two-thirds with this material, letting it run down the walls almost to the edges of the cavity, then covering either with amalgam or gold. In all large cavities, whether or not in pulpless teeth, I think this much the best way to fill. Only in case of abscess is it necessary to drill through the end of the root. If we have been careful in cleaning out the canal there will be no *débris* to be forced through with the drill. In all cases I prefer that the peroxide shall penetrate the canal ahead of my instrument, and I use it very freely. By using these precautions and with care I do not think we will find many roots of teeth whose formation will so limit our treatment that we shall be unable to save the tooth.

Discussion closed.

(To be continued.)

SEVENTH ANNUAL SESSION OF THE MARYLAND STATE DENTAL ASSOCIATION.

(Continued from page 499.)

DISCUSSION ON OPERATIVE DENTISTRY.

Dr. T. S. Waters, of Baltimore.—I am an adherent of both soft and cohesive gold, and I claim to exercise my judgment in using either. I think that, as has been remarked, we should all be conservative in our practice. I suggest that the consideration as to the material with which a tooth is filled is not the only one to be borne in mind. If the cavities have not been properly shaped and if the operation has not been performed with judgment, it matters not what the substance is that is made use of. Many failures have resulted from ignoring this fact as well as because of the selection of a certain kind of material for filling.

Another thing I have noticed is that, as practitioners, we do not pay that attention to the constitutional conditions of our patients which should be given them. My custom is to refer patients to their physicians, if they have a family physician. I am not practising medicine, and I have very frequently made suggestions to the physician, in a particular case, if I happened to be

acquainted with him. As a result of this, I have found that the patients have been much benefited by the medical treatment they received, and that this treatment has very materially aided in the success of the dental operation which I subsequently performed. I have in my mind at this time the case of a lady who was in a very depressed condition. Her nervous system had run down and she was verging on nervous prostration. When she came to me the enamel of two central incisors had been very much corroded and the teeth were extremely sensitive. I asked her if she had an attending physician in the city, and she replied that she had not. I then prescribed a certain line of treatment. This was about two weeks ago. She returned to me on, I think, the day before the present meeting of this society, at which time she had an appointment with me to have her teeth filled. The condition of her nervous system had meanwhile much improved and, as a consequence of this improvement, the teeth were less sensitive. I prescribed lacto-phosphate before meals, a malt extract with her meals, and Fowler's solution of arsenic after meals. I then dismissed her with an injunction to return in eight or ten days, at the end of which time I hoped to be able to fill her teeth. I mention this as one instance of many of a like character. I could detail a number of cases in my practice in which the success of my operation has been promoted by the patient subjecting himself or herself to a course of treatment under the direction of a physician preliminary to an operation on the teeth. This medical treatment has aided me very materially in the work of preserving the teeth.

Dr. Harris has alluded to plastic fillings, and I want to say in regard to them that, in this anæmic, debilitated condition of the patient, a plastic filling is the thing to use as a temporary filling, which will serve the patient until the teeth have returned to their normal condition. The teeth may then be filled with gold or whatever substance the operator may deem advisable. Doubtless other gentlemen present have noticed the constitutional conditions of which I have spoken and may feel disposed to explain them more intelligibly than I have been able to do.

With respect to the comparison which has been made between cohesive and non-cohesive gold, gentlemen have stated that if they were obliged to give up either, they would prefer to abandon cohesive gold. I have only to say that, at the time of my graduation in dentistry, I had knowledge only of the non-cohesive form, but, since then, I have learned to use gold in all forms; and if compelled to make a choice between the two, I would give up non-cohesive

foil. My reason for this is that I am an admirer of nature; and as the Divine Being has placed in the mouth teeth approximating each other, I am opposed to cutting away and leaving V-shaped spaces between the teeth, in which the food may impinge upon the gum and render it sore and inflamed. Nature has not intended that these V-shaped spaces should appear.

Dr. R. Finley Hunt, of Washington.—Not having heard the paper on Operative Dentistry, of course I am not so well prepared to discuss its contents as are the gentlemen who had the opportunity to listen to it; but the tendency of the discussion so far as it has continued since I have been present leads me to say one or two words in response to the kind invitation of the society.

A point was mentioned in the discussion which took place this morning with reference to the liability of teeth, particularly the bicuspid, to decay at the cervical wall after having been filled. I do not think that exemption from that liability is dependent so much on the material that is introduced into the cavity as it is upon the character of the permanent preparation of the tooth. I will probably be able to illustrate my meaning by mentioning the two points to which attention should be specially directed in the preparation of the cavity. We know that, in these cases, the cervical wall is the most difficult portion of the cavity to reach; and on that account it is frequently improperly prepared. I suggest, by the way, that it is a good rule for an operator to devote his closest attention in the preparation of a cavity to all of the most remote and inaccessible portions of that cavity. In the preparation of a cavity on the marginal surface of a bicuspid we may give as much attention as we please to the wall of the cavity, we may prepare the cervical wall by removing all the decay and softened portion of the tissue; but in almost every case an examination will show us that not only is the hard tissue in the cavity, but that the surface of the tooth above the cavity is affected. I speak now of superior bicuspid. If we fail to remove that softened portion of the tissue, and there is consequently a failure to resist the action of decay, caries will commence outside of the cavity, on the surface of the neck of the tooth. At the same time there is no doubt in my mind that the contact of amalgam with these softer dental tissues, the dentine and cementum, has a tendency to preserve that tissue. My experience has been that the material introduced becomes changed by chemical action upon certain metals entering into the composition of the alloy.

So much for amalgam and so much for the preparation of the

cavity and the materials that are introduced. But, as suggested by Dr. Waters, even with the most perfect preparation of the cavity and the most thorough, careful, and successful introduction of the materials with which to fill it, if the systemic or constitutional condition of the patient is of a certain character, that tooth will afterwards decay. Unless you institute treatment so as to bring the system into a condition in which the hard tissues are rendered more dense and more capable of resisting the decay, it cannot be stopped. We all know that, after filling a tooth on one surface, the patient has come back in a short time with the filling good, but the tooth decayed in another part which had previously exhibited no symptoms of decay. Therefore I agree with Dr. Waters that our attention should be directed more closely than it has been to the systemic treatment of our patients.

I am reminded of a case occurring in my practice, that of a young girl some fifteen or sixteen years old, the daughter of an eminent physician of Georgetown. I found that her systemic condition was such that the acidity of the secretions of the mouth was neutralizing the salts of the tooth, and that, if this was not changed, it would be utterly useless for me to fill her tooth. This was reported to her father. He paid me a visit and examined me for an hour and a half as to my reasons for the statement I had made. It was an hour and a half of great anxiety to me, because I felt that I was on trial, or that, as representing the profession, my profession was on trial before an eminent physician. I satisfied him, however, and he placed his daughter under a course of treatment. She returned to visit me occasionally, and at the end of two or three months her condition was changed. I then set to work to fill those teeth which required filling; I used soft foil. Six years afterwards she visited me, and I found every one of the fillings in good condition and every other tooth intact. In my opinion, if this course of treatment had not been adopted, her teeth, at the end of six years, would have been almost a wreck. What I have said will serve to show the importance of paying attention to the systemic condition.

As Dr. Waters has said, we do not give sufficient attention to hygienic conditions. If every practitioner of dentistry would give more thought in that direction I think that as much, if not more, good would be done. Not only should our attention be given to patients who come to us with decayed teeth, but we should endeavor to bring about, through parents, an improvement in the systemic condition of the children.

Now let me say a word as to phosphate and chloride fillings. When cement fillings were first introduced, it was the boast of those who prepared them that they would withstand the action of the strongest acid. That boast was a well-founded one. As a rule, acid does not affect the condition of oxyphosphate and oxychloride fillings. They are affected by a different chemical agent. I may say that I have pursued a line of investigation on this question for a long time, and have consulted some of the ablest chemists in Washington on the subject. I became satisfied that the destruction of cement fillings was due to the presence of an alkali, and I consulted these eminent chemists in order to ascertain by what means, in their knowledge, we could determine the character of these secretions or exudations of the gum which gave rise to this alkali. They expressed their inability to give the information unless the secretions or exudations were collected in sufficient quantities. Of course it was very difficult to collect them. They said it would be almost impossible under the existing circumstances for them to ascertain what I desired to know. By the way, Mr. President, it has been my opinion, and one which I expressed many years ago, that erosion of the teeth, which is sometimes called abrasion, is produced not by the action of the tooth-brush, but by the presence of an alkaloid in its natural state, which is caused by an abnormal condition of the gum. We know as a fact that if we take an oxychloride or an oxyphosphate filling and drop it into ammonia, it is very rapidly disintegrated and destroyed. We may drop some of that same filling into an acid of any strength, and we will find that it is not affected. Now we find that those oxychloride and oxyphosphate fillings very often, and in a majority of instances, where they fail at all, fail at or near the cervical wall of the cavity, where the exudation from the gum comes in contact with the filling. I have often found the plastic or oxyphosphate fillings to be perfectly sound in every part except at the cervical wall. At that point a deep cavity in the filling would be found. This showed that the erosion had acted on that and penetrated to the depth of the cavity.

In support of that view, I may add (for I think it is well that we should mention all our reasons in a matter of this kind) that in the course of my investigation in past years I found, in almost every instance in which this erosion was taking place, that the paper test showed the actual character of the secretions of the gum in the neighborhood of the erosion, while in other parts of the mouth the reaction would be the reverse. So that I think that the

failure of fillings of the material referred to is due, in a majority of cases, to the peculiar condition of the secretions of the mouth destructive to the structure of the fillings.

Dr. Samuel J. Cockrell, of Washington.—Not having been present when the essay was read, I am not informed as to the exact point at issue before the society, but I take it for granted that you are discussing what is the best material for the preservation of the teeth. The first question, then, is, Can teeth be permanently preserved by the use of gold or any other material? Gold was the material to which the attention of men of my age was called before we knew of any other substance. Dr. Waters has remarked that he was taught to fill teeth with non-cohesive foil only; and his statement will apply to many of the gentlemen now present. The subject is a very interesting one. That teeth can be saved by being filled with gold is a fact, and I think that persons who reach the age which has been reached by Dr. Hunt and myself and who have had the opportunity of seeing and learning what we have, will set it down as an undeniable fact that teeth can by this means be permanently preserved. Only a few days ago, when Dr. Magill came into my office, I had occasion to refer to certain teeth that were filled ten or fifteen years ago and which were now perfectly sound and good, though I regretted that I was unable to show the teeth to him. Facts such as these demonstrate that there is a material by the use of which teeth may be saved.

In more recent days we come to the work of our dear old friend, now on the other side of the river, who filled teeth with the same non-cohesive gold and saved them. I have among my patients at this time one whose teeth were filled by Dr. Arthur—it must have been thirty-five or forty years ago—with non-cohesive foil, and whose teeth are perfect to this day. Dr. Arthur then stopped using non-cohesive foil; and although many others have claimed the credit, Dr. Arthur was really the first to make use of that form of gold which is now termed cohesive or annealed gold. I had occasion, a few days ago, to refer to Dr. Arthur's work on the subject, entitled "Arthur's Annealed Gold," which he had kindly sent me. I have seen many operations from Dr. Arthur's hands with the same gold. He believed it to be a great improvement, but the results he obtained did not prove that it was equal to the other, for, having seen many of the operations, I can say that failures frequently occurred.

It is, however, only by reaching out for facts in a practical way that we can determine the actual worth of new materials and

methods and thereby make an advance in our specialty. We know how many years of constant application are required to enable a man to educate himself in dentistry. Proficiency in our specialty cannot be acquired in a day. For the average man, at least thirty years of hard study and work are necessary to qualify him for the practice of his profession. In saying this I do not overlook the fact that there are exceptional instances in which men with a special aptitude for the profession may accomplish great results in a shorter length of time. But I repeat, that to qualify yourselves as dentists requires time, and I think that the erroneous idea which seems to have prevailed on this point has been unfortunate for the profession and has retarded its progress. I do not mean to say that some men may not acquire proficiency more rapidly than others; on the contrary, I realize that one man can accomplish greater results with a few excavators and a few pluggers, say half a dozen of each kind, than can be accomplished by less skilful operators with the very best set of instruments.

In coming to the city of Baltimore my heart has been filled to overflowing, for I do not forget that this place is the Bethlehem of dentistry; that to Chapin A. Harris we probably owe more than to any other man of the profession.

I may state here that Dr. Harris filled my teeth certainly not later than 1852, it may have been in 1851. The fillings have never been touched from that day to this; and, for an old man, the teeth are good now. Some twelve or fifteen of them are standing perfect. We have heard much about the materials for filling, but is there anything that will stand usage for these many years in comparison with the non-cohesive gold in the fillings in my mouth, which has during all this time preserved my teeth free from decay? That is the question to be considered, and it is one which all of you, gentlemen, have to ask yourselves.

You must use that material which is of the greatest benefit to your profession, to your patients, and to yourself. We understand the difficulty of filling teeth down at the cervical wall. If you can fill teeth there of the molar and bicuspid class, I think you will succeed anywhere and everywhere. That material which will do this the best, I claim, is the non-cohesive foil, or what is now termed the old-fashioned foil.

Dr. Price.—I have been using Steurer's foil for about a year, but not for a sufficient length of time to thoroughly test it. I may say that the more I use it the more I am pleased with the results I obtain. I think it is certainly one of the best forms of gold we

have ever had prepared for our use. I am of the opinion we can press it more closely to the walls of the tooth than we can the others. It is especially fitted to work on frail teeth, and is also certainly well adapted for the labial walls of the teeth and in cases pertaining to that kind of work. But, as I have said, I have not yet used it for a sufficient length of time to enable me to ascertain how long the fillings are going to stand. As far as I have observed, it has done well, and fillings which I inserted a year ago are now just as perfect as they were on the day I put them in.

Dr. A. J. Volck.—I have a word to say, but I will say at the outset that it has no reference to the skill which an operator may have in preparing a cavity and putting in his gold, and it is irrespective of the condition of the cavity. I want to speak only of the properties of the various kinds of gold. I use principally non-cohesive gold; but when I use cohesive gold (and I use it freely in many cases), the great object with me is to make that foil as solid as it can possibly be made. In the very nature of the gold, by heating it and making it cohesive we make an absolutely solid mass of gold. I know this to be the fact, because I have taken some of those gold fillings and rolled them out and found that there was no failure of continuity in that material. Now the question with me has always been this: if we have a large gold filling in a tooth the walls of which are comparatively weak (and when the fillings are large the walls are generally more or less weak), and if we put in a material which perfectly fits that cavity, but a material which contracts and expands with the changes of temperature in the mouth, there must be a gradual destruction of that tooth. Those changes of temperature are very great, because people often drink a hot liquid of a temperature of 150° F. and follow it with a drink of ice-water, making a change in the temperature of the mouth of, perhaps, 112° F. in a single moment. When these changes are going on there must be either a breaking down of the walls or a still greater contraction of the gold, and consequent leakage.

Dr. Harris mentioned Dr. Webb's fillings, and I desire to say that Dr. Webb was unquestionably one of the most persistent users of cohesive foil that this country ever had. I know a gentleman now residing in this city who was formerly a superintendent in a nail and spike factory in Dr. Webb's town, and who has several of those large fillings, every one of which leak. I believe that the continual expansion and contraction of the gold is the cause of this, as it must necessarily in the end either wear out the walls of the cavity or destroy the filling by expansion and raising the surface.

I know, and the proof can readily be produced, that non-cohesive gold does not act in that way; that we can depend upon our ability to make a non-cohesive gold filling which does not leak and which lasts for many years. I know also the fact that in using cohesive foil we destroy many more teeth than when using non-cohesive foil. We should adapt ourselves to the two under certain conditions; but when we use cohesive foil we are obliged to cut away portions of the tooth that might otherwise be preserved.

Concerning the point as to the contraction and expansion of gold, I have only to call the attention of the profession to the fact that experiments can very easily be made to show that this is bound to injure the teeth in the end. When the fillings are small it may not have so much effect, but in some large fillings, which are to a large extent surrounded by the tooth-structure, failure is sure to follow, and I have never seen one such filling that did not break down.

Dr. T. S. Waters.—I desire to ask Dr. Volck one question. He knows that there are large amalgam fillings that are preserving the teeth and have been preserving them for years, and that these are conductors of heat and cold and subject to the same influences to which the large gold fillings spoken of are exposed. How can the doctor account for this?

Dr. Volck.—I do not believe that any amalgam filling was ever made that did not shrink some and leave some little space. Now, I have seen amalgam fillings tested in tubes. That is all very well, but it is one thing to put amalgam in a little tube and another thing to put it in the teeth.

Dr. Waters.—It has been proved that an amalgam filling does not leak, by testing in the mouth.

Dr. Volck.—I have seen many amalgam fillings in the years I have been in practice, but have not seen one that did not leak. I do not mean to say that the leaking was such as to do a great amount of harm. It is wonderful how long they preserve teeth and yet are not perfect. I have not seen a really perfect amalgam filling that has been in a tooth for many years.

Dr. F. J. S. Gorgas.—By way of relating something that may be interesting in connection with operative dentistry, I will say that many years ago (I think it was more than twenty), shortly after I became connected with the Baltimore College of Dental Surgery, Dr. Clark, of New Orleans, visited that institution and gave a practical illustration of his cylinder-filling method. That method has now, I suppose, become almost obsolete. But there is no ques-

tion that fillings inserted with cylinders, under favorable conditions, have proven successful in preserving the teeth. I might also, in connection with this subject, refer to a method which perhaps would bring in plastic gold in connection with cylinder filling. Of course at that day we had no such thing as cohesive gold foil. Cohesiveness of foil was considered to be a great objection. These cylinders were made some of hard and some of soft foil. The soft foil was adapted to the walls of the cavity and the hard for the centre. I know of a filling which was inserted in 1851, I think, which, I understood, a few weeks ago was still good.

I still use cylinders in cavities that have firm walls, and I combine with the cylinders plastic gold. After introducing the cylinders, as many as possible in a cavity, and using the soft foil, I affix them firmly to the walls of the cavity and all irregularities of the surface. I then use crystal gold, and insert it by the use of fine-pointed instruments. I think that a very good filling can be obtained in this way. I have been rather successful in using it, but, as I have said, it was made use of under very favorable conditions. Of course I would not recommend such an operation where the walls are unfavorable for it. I merely mention this as a matter of history in connection with the subject of soft and plastic gold.

Dr. D. Genese.—In many teeth coming under our notice having gold fillings in them, I find that the crown is perfectly solid, the teeth to all appearances intact, but that the condition of the pulp-cavity shows that the force made use of in inserting that gold has been destructive of the life of the tooth, because it has been excessive; that it has injured the pulp, and that disintegration of the tooth has followed. In the conservation of teeth of a frail character by the method of inserting plastic fillings for a year or so and then removing a portion of the crown of a filling and inserting a harder substance, such as gold or amalgam, I think we can avoid a great deal of the pressure upon the tooth-structure and have a more conservative treatment of them than we have by inserting a gold filling from the foundation of the cavity. In too many instances we adopt a more rapid treatment, on the first visit of our patient, than we are justified in doing. I have observed cases of the insertion of cohesive gold where the operator drilled pits for his starting-point. Many failures occur of the finest gold fillings which were built on this system, resulting in the total death of the pulp. In softer fillings, when they come to the close of the operation, instead of building up cohesive gold on the soft gold, the whole of the approximal cavity is filed away, which not only disfigures the tooth,

but, in many instances, leaves a sensitive surface that for many weeks causes the patient great annoyance.

At the cervical border I have seen many failures from the oxy-phosphate and the amalgam not uniting, or from the gold overlapping the edge. In the matter of tin and gold cylinders, too much oxide of tin is deposited, which is so soft that it gives no security against the inroad of fluids destructive to the cavity. Of all the materials, gold is claimed to be the best; but it is the best for grinding surfaces, but not for the approximal surfaces, for unless we get a thorough separation we cannot see our work from all points. The sensitiveness of the teeth, when operating beyond the cervical border, is often in the way of perfect work; but if the separation is maintained and allowed to remain for a day or two, a week, or more after insertion of the filling, so as to enable us to inspect our work when the irritation on the gum has passed away, we shall have a separation which will enable us to control all parts of the work upon which we operate. After the operation on these approximal surfaces I think we are not justified in sending our patient away as if it was wholly finished, but that, in order that we may keep up that separation, we should have the patient visit us again in a day or two, so that we may then inspect the work.

Dr. E. C. Kirk, of Philadelphia.—One point in the discussion, mentioned by the gentleman on my left (*Dr. Volck*), impresses me as one of considerable importance. I refer to what he has said upon the rate of expansion in a gold filling in comparison with the expansion of the tooth in which the filling is inserted. I think that he was hitting very near the truth, although it seems to me that there was one element of error in his position.

If I am not mistaken, *Dr. Webb*, at one time during his life, undertook an investigation to determine whether the gold which he inserted in the cavity by the mallet was of the same density as the gold theoretically. If I remember correctly his results fell a little short of producing the required density; thus showing that the gold was not absolutely homogeneous. The method which *Dr. Volck* suggests as having been satisfactory to him in testing this matter seems to me to be open to criticism, because the process which he employs for rolling the gold into plate or drawing it into wire of itself renders the gold thoroughly homogeneous apart from any method which might be employed for inserting it in cavities as a filling.

Dr. Volck.—If it be admitted that it has previously been annealed?

Dr. Kirk.—Certainly. Dr. Bonwill has brought forward the same experiment to demonstrate that his fillings, inserted by the mallet, were perfectly homogeneous.

The experiment by which Dr. Webb undertook to prove the homogeneity of his fillings, and which I think is the best method that can be employed, is the specific gravity test, if I recollect correctly. I cannot say that I am quoting him literally, but this is my recollection, that the filling inserted by him in a steel plate by means of the electric mallet showed somewhat less specific gravity than that which belonged to pure gold, thus showing possibly that they were not homogeneous. I question very much if we can put in a filling, under any circumstances, which is in a strict sense homogeneous; that is to say, an instance in which the filling expands and contracts as a unit must be a rare one. The point which Dr. Volck has developed in regard to expansion and contraction is certainly a very interesting and important one; but I think that, back of all else, the one primal cause of failure in gold filling at the cervical wall is to be found in the over-malleting of gold at that point. As I have had occasion to state heretofore in dental society meetings when considering the subject, the confusion that exists in the minds of dentists with respect to the terms hard and soft or cohesive and non-cohesive gives rise to this difference of opinion on the subject. There is no reason why a gold foil should not be absolutely soft and absolutely cohesive at the same time. Non-cohesive foil is not necessarily soft. It imparts a feeling of softness to the filling because the lamina of such foil slip or slide upon each other. But if you take an individual sheet, hold it by the corner and shake it, it will in most instances develop that crackling or sharp metallic click indicating hardness. I think that a perfectly accurate adaptation can be had with the strictly cohesive foil which is at the same time soft. Those foils are now made. I think that if we would properly distinguish in the application of the terms which are applied in such cases there would be less confusion and less misunderstanding in our discussions of the subject.

Subject passed.

(To be continued.)

NEW YORK ODONTOLOGICAL SOCIETY.

(Continued from page 472.)

Dr. S. E. Davenport.—If I may be allowed, I would like to read an extract from a personal letter recently received from Dr. George H. McCausey, of Janesville, Wis., who, it will be remembered, was the author of a very valuable paper which was read before this society last January, the title of which was "The Dental Pulp and its Relation to the other Tooth Tissues." Dr. McCausey says,—

"On reading the discussion upon my paper I was impressed with an idea, more than ever, of the advantage to be derived by both hearers and the author when a paper is read by the writer himself. Many questions arise which the writer cannot or does not always foresee, and which, if present, he may perhaps be able to render clear.

"The microscopist always encounters a certain amount of difficulty in the demonstration of histological truths before a miscellaneous body of men who are not microscopists, even if he has his microscope and slides present. My own observation and experience have taught me the folly of submitting the finest differentiated specimens to untrained eyes even with low powers, to say nothing of those sufficiently high for use in a study of the tissues of the pulp.

"I have always found myself better able to instruct my hearers through the medium of photo-micrographs than through the microscope itself, except in the case of the experienced observer. No one should expect to accomplish much in microscopy unless he is willing to take the time and trouble to render himself familiar with the technology of cutting and mounting sections. He must study the necessities in each variety of tissue, or he will be heard complaining that his friends arrive at results which are very much different from those which he arrives at. One cannot buy the slides which are generally placed upon the market and study them to any great advantage. Their secrets are not yielded up readily, for they are behind a balsam door which has been locked with the key alcohol. Since sending the paper to your society I have done little with the microscope on account of my health and have written none for the same reason.

"The tissues which I studied while writing the paper I did not mount for lack of time, but when I make some more sections of the tissues I will try to get the time to prepare a slide for Dr. Allan, and which I hope will please him on account of what the microscope may reveal in it. In the mean time, I think that it would pay him to visit Dr. Heitzmann in his laboratory and look his slides carefully over, and he will be able to see the reticulum of 'living matter' even as Dr. Heitzmann himself puts it.

"At one time I doubted its existence, but afterwards found it to be on account of my faulty methods both in staining and mounting. Objectives of the

very best defining power are necessary, or indifferent results will be obtained. I threw away about all my leisure time during a period of about six months in an endeavor to combine the use of objectives of not the best correction, with faulty methods in preparation of tissue. I am greatly pleased at the kindly reception of my paper by the Society."

Dr. Allan.—Mr. President, Drs. Andrews and Sudduth have both examined the preparations in question and both have failed to see anything approaching in appearance the reticulum described. I have examined very carefully, and I want to say that there is no reticulum to be seen in them; of that I am certain; and I state here now, publicly and in dead earnest, that if any man will get me slides, authenticated by Professors Heitzmann and Abbott, saying that they contain the reticulum, and also the privilege of publishing precisely what I see, with illustrations, and the criticisms of experts, I will take it as a very great favor.

The President.—We will now pass to the reading of the paper of the evening, and I have the pleasure of introducing Dr. L. Duncan Bulkley.

(For Dr. Bulkley's paper, see pages 449 and 513.)

The President.—The subject of Dr. Bulkley's very valuable and interesting paper is before you and is open for discussion. We are favored by having present several eminent medical men this evening, and the society would be very glad to hear from them, and also from any dentists who are our guests, either in discussing the subject or asking questions. It occurs to me that Dr. Bulkley has opened the way for the dentists present to draw out considerably more information. Dr. Morrow is present; we would be glad to hear from him.

Dr. P. A. Morrow.—Mr. President and gentlemen, the subject has been so very fully and exhaustively presented by the reader of the paper as to leave little to be added in the way of discussion.

Considering the multitudinous chances of contagion to the dentist in his work, it is somewhat remarkable that so few cases of syphilis communicated to the operator have been recorded. This may be due to the fact, however, that dentists as well as physicians contracting contagion in this way are not very ambitious to advertise themselves as subjects of syphilis. I have no doubt that a great many cases of syphilis communicated in the exercise of professional duties have not been reported, for the reason that by the general public, as well as by a great portion of the profession, syphilis is looked upon as a shameful disease,—a disease which carries with it the stamp of immorality. From the great number of cases of non-venereal syph-

ilis, which Dr. Bulkley has referred to, it is very evident that syphilis is not necessarily a venereal disease. Fournier, in the latest edition of his work on "*Syphilis and Marriage*," states that he has investigated the histories of several hundred cases of syphilitic women, and he found that one out of every five of these patients was a married woman. He found also that of this entire number, twenty-five per cent. of the cases were communicated innocently. Therefore, syphilis really is not a disease which necessarily implies dereliction of moral duty on the part of the individual. The general impression is that in order to have syphilis one must seek it, and seek it through the ordinary impure sources; but the syphilis among married women and nurses and the syphilis that is communicated in industrial pursuits, and what may be termed professional syphilis among surgeons, midwives, and dentists, must be placed in the category of *unmerited syphilis*; the number of cases of syphilis communicated in perfectly innocent ways is enormous.

In speaking of the duration of the contagious stage of syphilis, the reader of the paper referred more especially to mucous patches and syphilitic ulcerations, and, as he intimated, it is impossible to fix a definite limit which marks the end of the contagious activity of these lesions. Ordinarily, after two or three years we do not regard syphilis as contagious. Certainly cases of contagion have been reported as occurring from older lesions, but these are so very few that the danger of the contagion of syphilis after three years may be looked upon as infinitesimal. It may be said that the lesions of secondary syphilis, especially buccal lesions, are ultra contagious. We find, in tracing the origin of syphilis in married women, that an immense majority of the cases of syphilis have been conveyed not from the chancre, but from mucous patches. These patches have their origin and centre in the mouth. The blood of syphilis is also very actively contagious during the entire secondary period.

There is one possible mode of contagion which Dr. Bulkley omitted to mention,—viz., syphilis communicated by the saliva. Now, it is well known that the physiological secretions are not contagious; that is, saliva, the milk, the tears, and other physiological secretions do not, in a pure state, contain the virus, but they may serve as vehicles for the transmission of syphilitic poison; when the saliva becomes mixed with the secretions of the mucous patch in the mouth it is just as capable of conveying the disease as the secretions taken direct from the patch itself. It has been proved that syphilis has been conveyed from the patient to the

operator by his placing an instrument between his teeth, which was moistened with the patient's saliva. A number of cases have been reported which have been due simply to the mixing of the secretions of the mucous patch with the salivary secretions in the process of tattooing. As I have said, the dentist is exposed to great possibilities of contagion. In common with most specialties, I almost always begin the treatment of syphilis by an examination of the patient's mouth and teeth, and ordinarily, if I do not find them in good condition, my first step is to send the patient to a dentist to have the teeth cleaned and the broken, jagged edges smoothed. I do this simply because I recognize, as others do, that in the treatment of syphilis it is necessary, in order to prevent the occurrence of mouth lesions, that the teeth and the gums should be kept in the best possible condition. I think it is the practice of most physicians who treat syphilis to pay special attention to the condition of the teeth, and it has sometimes occurred to me whether it was a proper thing for the physician in sending a syphilitic patient to a dentist to enlighten him as to the nature of the patient's disease; in other words, whether it be right or proper to expose the dentist to a possible source of contagion, which he might not recognize, without some intimation. We all know how close and intimate the confidence is between patients of this class and the physician, and I have concluded that, considering the infinitesimal danger to the dentist, it is not proper to violate professional confidence to that extent. But I certainly concur in the suggestion of the reader of this paper that dentists should make themselves familiar with the mucous membrane manifestations, or at least the buccal lesions of syphilis. These when once seen cannot fail to be readily recognized; that is, the typical mucous patch is so characteristic in its aspect and location, and in its course, that it may be recognized at a glance; and it is certainly for the protection of the dentist that he should be able to recognize such a possible source of danger when he is brought in contact with it. Fortunately the epidermis of the fingers and the hands is so thick that it constitutes a very effectual protection. I do not believe it is possible for the syphilitic poison to penetrate through the unbroken epidermis of the hand, and unless the dentist happens to have an abraded surface, hang-nails, or the nails cut too close, leaving an exposed point for the entrance of the poison, I do not think there is any possibility of his contracting syphilis by having the fingers come in contact with syphilitic virus.

One prophylactic measure which might be used with advantage

in cases like those, and which probably would not interfere with the dentist's manipulations, would be to have the exposed fingers protected by rubber stalls; this would constitute perfect protection.

As regards the disinfection of instruments which are ordinarily employed by dentists, I would concur in the suggestion that strict asepsis of all instruments should be rigidly observed. My impression is that the ordinary smooth instruments, not rough instruments, can be thoroughly cleansed of all syphilitic virus by simply wiping them with a towel, or first moistening in alcohol and then wiping. The virus does not adhere so readily to a smooth surface as to a rough one, but it is better to err on the safe side and practise strict asepsis.

Dr. E. A. Bogue.—Perhaps I am in order in asking whether cold has its influence upon syphilitic virus; and, further, whether the use of oils of various kinds on the fingers would not be more or less of a protection, on the part of those who are operating, from such patients as Dr. Morrow has just spoken of?

Dr. Meriam.—There is one agent that we are in danger of losing sight of,—alcohol. It is, I know, used extensively for washing root-canals; but, I think, nearly all of us look on its mechanical value, when, in fact, it has a higher rank as a disinfectant.

Before antiseption received the attention that it does now, alcohol was used by surgeons to wash the parts after operations. The late Dr. Cabot, of the Massachusetts General Hospital, Boston, used to wash his fistula operations with it. We are informed that the ancient surgeons washed their operations with wine, and the good Samaritan thus seems to have had a practical knowledge of antiseptic treatment.

When we think of the specimens in our museum that it preserves we get an idea of its power. We should not have them did it not prevent the development of germs.

I am more and more inclined to the opinion that alcohol is all the value, beyond flavor, there is in many of the mouth-washes. Some physicians, I know, use it both as a spray and a gargle in diphtheria or diphtheritic sore throat.

It is the antiseptic *par excellence* for instruments, as it can be used without soiling, burning, or scenting the hands. Burs and files can be cleaned with it, and in operating below the gum I always dip the point of my instrument into a little that I have poured into one of the wells of my porcelain slabs, as I work, and often the points of excavators and burs. In excavating, the slight amount

that adheres to the point of the instrument need not be wiped off. Those who prefer can use an essential oil or carbolic acid with it. Its non-poisonous, non-escharotic nature and the fact that it roughens the hands but slightly commend it to dental practitioners.

Dr. Perry.—Mr. President, you have called this a valuable paper. I would call it an invaluable paper. It happened to be my good fortune, many years ago, while living at Yonkers, to be a member of the Yonkers' Medical Association, by which means I was brought in contact with the physicians and surgeons who were members of that Association, and I particularly became well acquainted with Dr. J. Foster Jenkins, now dead, who was formerly secretary of the Sanitary Commission. For quite a number of years I was accustomed to observe the reports made by members of the medical fraternity of syphilitic cases, and while yet quite a youngster I became aroused to the dangers of the disease, and, in those early years I took the best means I could find at that time to guard against it. I have always felt that it is one of the greatest dangers we have to meet, and that there is a moral responsibility connected with it that the profession has never sufficiently considered. In those early years, before the bichloride of mercury became so generally used, it was my habit to have all instruments cleansed with a carbolic-acid solution, and in later years it has been the invariable custom in my office, when a patient is dismissed, to sweep aside all the instruments that have been used and take up another set, and the others are not again used until my lady attendant has cleansed and disinfected them and put them back in case. Several times I have been asked by visiting dentists, who happened to see that done, why I took all that trouble, and my answer has always been that, although I didn't feel really that there was so much danger of infection (because in all these years I have never seen a great many syphilitic cases), still I did not wish to take any chances; and so it has come to be my invariable rule that every instrument, even my pluggers, which are not supposed to touch the soft tissues at all, should be passed through a disinfecting fluid before being put in their places for use again. Dr. Jenkins impressed upon my mind the fact that syphilis could be conveyed through the blood of a patient. I was frightened and made to tremble by the presence of this danger; it has hung over me as a cloud; and yet such an accident has not occurred to my knowledge in my office. But there is a moral responsibility resting upon every one of us in regard to this matter, and I thank Dr. Bulkley for presenting the subject as he has to-night.

Dr. William Frederick Holcombe.—Mr. President, I was invited

to be here to-night, and came because I wished to be present to hear the excellent paper of Dr. Bulkley, an authority that I consider one of the best in the world in his specialty, and I am happy to say so in his presence. About thirty years ago a gentleman came to me with a sore on the root of the first finger-nail. I looked at this sore and asked, "Have you hurt that in any way?" He said that he "didn't know that he had, but it had gradually come." After a very short time I saw him again; it developed into unmistakable syphilis. That gentleman went through a course of syphilis, was treated by several physicians, and escaped barely with his life. He said at the time that he was pricked by one of his instruments just below the nail. He was not aware that the instrument went into the flesh; but the probability is that there was a syphilitic sore in the patient's mouth and it inoculated the system with the syphilitic poison. In 1851 I was a pupil of Ricord, who has just died at the age of eighty-nine. He was an authority on syphilis for half a century; and among all the methods of contracting syphilis that he mentioned, I never heard him speak of this as one of the possible means for the contraction of this disease,—that is through the means of dental instruments. It shows that we are making progress at the present time. In these lectures that I heard in 1851, in the Garden of the Louvre Hospital, where he lectured, innumerable instances were given of the possible contraction of syphilis. They were so numerous that I wonder that we do not all contract it. I wonder that any of the doctors escape; and, as it is possible for a wound on the finger to become inoculated with the syphilitic poison in examining the mouth, the dentist is specially liable to contract it. I heard Ricord mention the fact that the application to the fingers of something of the character of lard or grease would probably often prevent the poison being taken into the system. I heard Dr. March, of Albany, advise his pupils, when making examinations of syphilitic patients, where they had hang-nails or any broken skin on the fingers, to always put some kind of ointment upon their fingers before operating. While going to the Medical Convention at St. Paul, I was talking with a gentleman from Columbus, Georgia, and he called my attention to a child who was on its knees in another seat, gnawing the back of the car-seat. He said, "I saw a man sitting down there a little while ago with some evidence of syphilis on the back of his neck;" and he said, "I believe that time and again persons contract syphilis by putting their heads back on the chairs where other persons having syphilis have reclined." I hardly ever sit down in a barber's chair without

putting my pocket-handkerchief or something of that kind on the head-rest. We cannot, as a man said the other day, have a new chair every time, but we can have a new napkin for the back of the chair. The tumblers that the dentist and his patients drink out of may be the means of transmitting syphilis; if a man has a chancre on his lip he may give it to the person who drinks after him. I will state one case where two innocent persons, so far as I know, were the subjects of syphilis. This was about thirty years ago, in 1862. In a well-known family, an estimable girl, who was a companion of children, came to me with syphilitic symptoms and iritis. I asked to have the persons with whom she was living come to see me. They came. I asked to have another examination, and finally asked for a special consultation in the matter. I asked the girl in regard to her character, and she said that her character was perfectly pure. I asked her, finally, whether she had any sores on her lip. She said she had a bad sore about three months ago. There was a scar there. Her case was one of marked syphilis. She went through a course of treatment, the syphilis was cured, and she became a married woman, living in respectable society, but has had no children. She said at that time she had a man who wanted to marry her and that he had had a sore on his lip. The fact undoubtedly was that she got her syphilitic sore from him through kissing.

A lady came to me fully eighteen years ago who had terrible syphilitic iritis. She belonged to one of the best families. I found that her mother had a similar sore, also her aunt, and her grandmother. There was a young man courting one of the daughters, whom he had kissed and had inoculated the whole family.

Dr. Kingsley.—May I ask what is the moral of that,—that a man must not kiss his grandmother?

Dr. Holcombe.—He must not kiss anybody. I recollect an instance that occurred once on board some ship with Horace Greeley's wife. Her little child was taken up by a stranger and kissed. The mother took the child from him and said, "Sir, I do not allow you or anybody to kiss my child." She took her handkerchief and spat on it and rubbed the lips off. This kissing business is often perfectly terrible in results. Some nurses kiss a child on the lips, and kiss it on the nose and ears, and kiss it all over; and I have not the least doubt but that syphilis is conveyed to many innocent persons by this habit. I should like to ask Dr. Bulkley one question: if he believes that the dry powder of syphilitic chancre, having been rubbed off, like vaccine virus, and blown

through a room, would, by being inhaled, be the means of communicating syphilis. I heard Ricord once say that many cooks would communicate syphilis to a whole family; the cook would have a sore on his lip and would not think anything about it, and he would taste the different dishes and put his fingers into them,—and all know the French cook has a habit of handling the meats with his fingers,—and many people undoubtedly have contracted syphilis from food handled by cooks. It was the old-fashioned way in hotels of having the towels on a roller for the common use of guests; and I remember once on a Scotch steamboat there was a tooth-brush for the whole crowd. I have no doubt that tooth-brushes sometimes used by several younger members of a family have been the means of communicating syphilis. I have had many patients come to me and say that they caught the disease from a water-closet; and I have no doubt that many cases of gonorrhœa and syphilis have been communicated by means of water-closets. I think they should be under direct sanitary inspection, just as much as the foul air that comes from the sewer. Not long ago I was in a cigar-makers establishment, and I noticed that every cigar-maker, when he was finishing the end of the cigar, wet the forefinger and thumb with his lips to point it nicely. I wondered at the time if he had a lip-chancere; and question if the disease has not been given to many persons in that way. I know of a case where, a few days ago, a lady kissed every female in the room, and one of the persons in that room I know had had syphilis. Some people make a business of kissing everything, kissing animals, birds, dogs, and cats, and it is very suggestive of the transmission of disease. The habit of putting money into the mouth, that some people have, is one that might lead to syphilitic infection. A butcher or grocer will often hold half a dozen bills in his mouth, and children and grown people, will put silver pieces and pennies in their mouths; and I have wondered that the habit has not been more productive of disease than we have observed. At all events, it is well to have our attention and that of the public called to the means of contracting syphilis and other diseases.

Dr. Perry.—Mr. President, may I ask one question? Dr. Bulkley alarmed me a little by his remarks in regard to the implantation of teeth. The dangers he spoke of existed, of course, before the time when antiseptics were used as they are now; but I have assumed that we could not now be in danger of conveying disease by implanting teeth. I have considered that there was no

danger, at least to the patient, but I have felt that I could not really perform the operation without danger to myself; that I must run the risk that all surgeons run whose hands must be covered with the blood of their patients, a greater danger to me than to the patient. If in implanting teeth we have not rendered them as safe as we supposed by the disinfectants we have used, it is a serious matter. I have made about sixty implantations, and I have done it with a feeling of perfect assurance that there was no danger to the patient. Since Dr. Bulkley has made this statement about the risk attending the implantation of teeth, I would like to ask him if he considers there is any, provided the teeth are cared for as we care for them, in the matter of previous treatment and the attention to the details of thorough cleanliness?

Dr. Dwinelle.—Mr. President, I am exceedingly obliged, for one, to Dr Bulkley for the very interesting and suggestive paper he has read to us to-night. I have no doubt that it is based on the facts of the case, and I think they will find an echo in every one of our minds, and that the points made will be endorsed and will suggest many others similar. I think it was John Wesley who originated the expression that cleanliness was next to godliness. He put cleanliness first! I think the lesson given to us to-night should be appropriated by every one present. I have no doubt it has been, and that the hints given us will induce us to be more assiduous and careful in the respect indicated. It is incumbent upon us to be exceedingly cleanly in every department of our work. The matter of implanting teeth suggests the fact that John Hunter was among the first to transplant teeth, which he did successfully. In one instance he transplanted a tooth from the mouth of a servant girl into that of a lady of quality, who thereby became infected with syphilis, from which she lost her life. Subsequently the practice was discontinued until recently, when the similar process of implantation has taken its place. I have no doubt that the matter of the implantation of teeth has suggested to the mind of the operator in our day the unhappy results in John Hunter's case; but our apprehensions are relieved in this respect, from the fact that the teeth we use are always subjected to chemical disinfection, which renders transmission of any virus impossible. It has been my habit, when I have found a patient with syphilitic or other disease, to use a certain set of instruments for that patient exclusively. It were better still not to operate for such patients at all. If it were known to our patients generally that in a single instance we harbored a pronounced syphilitic patient, our practice

would become exceedingly small. All our instruments should not only be kept clean, but they should be constantly disinfected. I remember one case, a very marked case, which I once treated. The patient had a perforation of the palatine arch, through which I could insert my little finger. I succeeded in closing the opening in the course of six months. The patient afterwards fell into the hands of an electrician, who made the hole larger than before. I finally closed it with a plate.

I once saw a well-authenticated case of transmission of syphilis in the fingers of a dental operator. We owe it to our patients, as well as to ourselves, to be ever watchful and on the alert in this matter, especially when new patients occupy our chair. Our experience has taught us that a little quiet quarantining in this direction can do no harm.

I am glad this subject has been brought up. As Dr. Perry has remarked, a good healthy fright on the subject will do us good.

The President.—Gentlemen, if none of you have anything further to offer on the subject, I will ask Dr. Bulkley to close the discussion.

Dr. Bulkley.—Mr. President, I will only answer some questions that have been asked. I think the comparative immunity of the physician and the dentist, the infrequency of the communication of the disease to themselves, is due to the frequent washing of the hands and the guarding of any sores that may be upon them.

I am asked by Dr. Bogue in regard to the application of grease to the fingers of the operator. I certainly think that is a most important protection in cases of exposure. Only last week I examined a case of chancre in the back of the throat, in the region of the tonsils, and in order to make the diagnosis clear I wished to feel it with the fingers. I rubbed my fingers with vaseline, and then felt for the chancre, and satisfied myself in regard to the nature of the sore, which proved to be a hard chancre, the primary lesion of syphilis. After wiping my hands with cotton and washing them I felt safe. Oils and fatty matter are good protectives against the virus. I could put a quantity of syphilitic virus on my hand and leave it there to dry over night, and I do not think there would be any danger as long as there was no broken surface; upon a healthy finger there is no danger. If an accident should occur by which the epidermis is punctured, I think a safe course would be to apply suction to the wound immediately. If a finger should be wounded, wash it instantly and suck it freely and thoroughly, spitting out the blood.

I am asked by Dr. Bogue about the efficacy of cold. I did mention cold, and said it would kill the virus. Undoubtedly cold, freezing, will kill the syphilitic germ.

The suggestion in regard to the use of alcohol is a very good one. I think I should have mentioned alcohol in connection with the bichloride of mercury and carbolic acid as destroyers of syphilitic poison. Pure alcohol is undoubtedly a thorough antiseptic.

Dr. Perry.—May I ask Dr. Bulkley how strong a solution of bichloride should be used?

Dr. Bulkley.—I hardly know. I have an idea that it is sometimes not used strong enough. I should think that less than one to a thousand, and certainly one to five thousand, would be useless.

Dr. Perry.—Would one to five hundred be unsafe?

Dr. Bulkley.—I hardly know. I would not suggest it. It is very difficult of determination, because we have no means of testing or verifying it. We are naturally unable to experiment on human beings, and animals will not take syphilis. You cannot inoculate a horse, dog, or cat. Monkeys have been thought to have been inoculated, but it is very doubtful. I am asked whether the dry powder of syphilis, when blown through a room, would convey the disease. I should say not. The quantity would be so infinitesimal that I think it would not convey the disease unless it came upon a wound. If taken into the lungs it would be thrown out. We know of no means of syphilitic inoculation except through an open wound.

In regard to the acquiring of syphilis innocently in water-closets, I only recently found one authentic case in literature. None of the old writers have given an authentic case. Cigars do give it. I have myself reported two cases where men had chancre of the lip from cigars. I saw a cigar-maker who ceased rolling cigars because his lips were so sore from mucous patches that he could not roll and moisten them any longer. They tell me that manufacturers are now very strict in cigar-factories, and dismiss a man when they find them rolling cigars on the lip; but formerly it was not so.

Dr. Allan.—Tobacco is a strong antiseptic.

Dr. Bulkley.—It does not prevent inoculation from a cigar.

In regard to planting and transplanting teeth, these cases that I speak of were all old, going back about one hundred years, to the time of John Hunter. I cannot find any recent cases. It is said that there have been new cases reported recently of syphilis conveyed by transplanting teeth, but I have not been able to find them. I suppose the modern method is to clean and render aseptic the teeth implanted.

Dr. Perry.—Yes.

Dr. Bulkley.—The periosteum is cleansed?

Dr. Perry.—Yes. I am very much exercised by the statement of Dr. Bulkley that a solution of bichloride one to five hundred might not be sufficient. The teeth I have implanted, and the teeth that Dr. Younger implanted have been subjected to a solution of bichloride from one to five hundred to one to one thousand; if that is not strong enough, we have been in greater danger than we dreamed of.

It has been assumed that in the use of bichloride, one to five hundred, we were perfectly safe in the performance of the operation.

Dr. Bogue.—Mr. President, it seems to me that there is a little bit of talking at cross purposes. Dr. Bulkley evidently does not understand that Dr. Perry is speaking of the implantation of teeth that may have been extracted from one to one hundred and fifty years back. The transplantation of teeth is a thing which is done immediately from patient to patient. Teeth that have been dried for years, I suppose, are beyond question safe; but transplanting from patient to patient within ten minutes is what I understand Dr. Bulkley to be speaking of.

Dr. Bulkley.—I presume, Mr. President, that the experience of dentists is that implanting teeth is like driving pegs of bone into bone,—they are absorbed,—that a tooth has no life when transplanted, but is utterly dead; then certainly it can be penetrated by your antiseptic; but whether a solution of one to five hundred is sufficient or not I cannot say.

Dr. Perry.—I never transplanted teeth freshly from one patient to another: never. I have no doubt that that can be done with safety in many cases, but I have never taken the risk. All the teeth I have planted have been first dried and then soaked in the bichloride.

Dr. Morrow.—I would say that there is hardly a possibility of the syphilitic virus retaining its potentiality for mischief after it has been dried for any considerable length of time. There is no danger whatever in the implantation of teeth as ordinarily practised. Certainly a tooth that had been dried for twelve months or longer could not possibly convey syphilis. So far as the transplantation of teeth is concerned, it seems to me that it would be a very reprehensible act on the part of the dentist to transplant a tooth from one individual to another unless he had satisfied himself that the former was not syphilitic. It is quite an easy matter to

determine whether a patient is in the active stage of syphilis or not, and that should be determined before extracting the teeth and transplanting into another individual's mouth. That, it seems to me, is a very much readier means of solving the problem than any possible disinfection. I think bichloride one to five hundred is amply sufficient to destroy the germs of syphilis.

Dr. Howland moved a vote of thanks to Dr. Bulkley for his very valuable paper. Carried.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE Seventh Annual Session of the National Association of Dental Faculties was held at Excelsior Springs, Mo., commencing Monday, August 4, 1890.

The following colleges were represented :

Baltimore College of Dental Surgery, M. Whilidin Foster.

Boston Dental College, Wm. Barker.

Chicago College of Dental Surgery, Truman W. Brophy.

Kansas City Dental College, J. D. Patterson.

Missouri Dental College, W. H. Eames.

Ohio College of Dental Surgery, H. A. Smith.

Pennsylvania College of Dental Surgery, C. N. Peirce.

University of California, Dental Department, C. L. Goddard.

University of Iowa, Dental Department, A. O. Hunt.

University of Michigan, Dental Department, J. Taft.

University of Pennsylvania, Dental Department, James Truman.

Vanderbilt University, Dental Department, D. R. Stubblefield.

Louisville College of Dentistry, A. Wilkes Smith.

Indiana Dental College, J. R. Clayton.

Dental Department of Southern Medical College, L. D. Carpenter.

Dental Department of University of Tennessee, R. B. Lees.

University of Maryland, Dental Department, John C. Uhler.

Columbian University, Dental Department, H. B. Noble.

On motion, Dr. J. D. Patterson, Kansas City, was elected secretary *pro tem*.

The following resolution, offered by Dr. Hunt, was adopted :

" Resolved, That in all colleges of this Association students to be graduated at the expiration of two years after admission must enter the school not later than twenty days after the opening of the regular session following this meeting."

The amendment to the constitution laid over from last year, providing for changing the name of the Association to American Association of Dental Faculties, was lost.

Applications for membership laid over last year, under the rules, were taken up and the following were admitted: Royal College of Dental Surgeons of Ontario; College of Dentistry, Department of Medicine, University of Minnesota (represented by Dr. W. X. Suduth); American College of Dental Surgery (represented by E. P. Hazen).

The following applications for membership were laid over under the rules: Dental Department of Howard University, Washington, D. C., and College of Dentistry, University of Denver.

The resolution offered by Dr. Patterson and laid over last year under the rules was taken up, amended, and adopted as follows :

" Resolved, That after the session of 1890-91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges in this Association, but he may be excused from attendance upon lectures and examinations upon the following subjects: general anatomy, chemistry, physiology, and materia medica and therapeutics."

Dr. Marshall's amendment to the constitution, providing that in all matters not in conflict with Article V. of the constitution a majority of the colleges belonging to this Association shall constitute a quorum, was taken up and adopted.

The following resolution, offered by Dr. Hunt, was adopted :

" Resolved, That we recommend that students take two full courses in studies of a general character, such as anatomy, physiology, chemistry, general principles of surgery, and materia medica and therapeutics, and three courses in those of a special dental character."

Dr. Goddard offered the following resolution, which was adopted :

" Resolved, That final examination may be taken at the end of the second year in three general studies."

The following, offered by Dr. Truman last year and laid over under the rules, was adopted :

"Recommended, That for a full annual course of lectures the minimum sum of college fees be \$100; that diploma fees be omitted, and an examination fee of not less than \$25 be substituted therefor and made non-returnable; that a matriculation fee of \$5 be charged annually. Special-course fees to be \$10 for each branch taken, and \$5 matriculation fee."

The following officers were elected for the coming year: L. D. Carpenter, Atlanta, Ga., President; W. H. Eames, St. Louis, Mo., Vice-President; J. D. Patterson, Kansas City, Mo., Secretary; H. A. Smith, Cincinnati, O., Treasurer; J. Taft, Cincinnati, O., Truman W. Brophy, Chicago, and A. O. Hunt, Iowa City, Ia., Executive Committee.

The following committees were appointed: James Truman, Philadelphia; Frank Abbott, New York; and John S. Marshall, Chicago, *ad interim* committee; J. A. Follett, Boston; D. R. Stubblefield, Nashville, Tenn.; A. Wilkes Smith, Richmond, Ky.; C. L. Goddard, San Francisco, committee on schools.

Adjourned to meet on Saturday, August 1, 1891, at 10 o'clock A.M., at the place appointed for the next meeting of the American Dental Association.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE Ninth Annual Meeting of the National Association of Dental Examiners was held at Excelsior Springs, Mo., commencing Monday, August 4, 1890.

The following State Boards were represented:

Colorado, Dr. P. T. Smith.

Illinois, Dr. C. R. E. Koch.

Iowa, Drs. S. A. Garber, E. E. Hughes, and E. D. Brower.

Pennsylvania, Dr. Louis Jack.

Maryland, Dr. T. S. Waters.

Kansas, Drs. L. C. Wasson and A. M. Callahan.

Ohio, Drs. J. Taft and H. A. Smith.

Minnesota, Dr. J. H. Martindale.

During the sessions the Board of Registration in Dentistry for the State of Rhode Island and Providence Plantations, represented by Dr. Wm. P. Church, was elected to membership.

In the absence of the secretary, Dr. F. A. Levy, Dr. J. H. Martindale, of Minnesota, was elected secretary *pro tem*.

After discussion, the following resolution, offered by Dr. Jack and amended by Dr. Koch, was adopted, on motion of Dr. Taft:

"Resolved, That this body recommends the various examining boards under no circumstances to grant temporary licenses to dental students at any period of their course of instruction, whenever their State laws will permit them so to do."

Drs. Jack, Garber, and P. T. Smith were appointed a committee to formulate the principles which this Association would recommend should be incorporated in the State laws. This committee subsequently presented a report which, as amended and adopted, recommended the following principles for incorporation in laws for the regulation of dental practice or for the guidance of those framing them:

1. The creation of Boards of Examiners in each State.
2. The Boards to be officially created by the constituted appointing power of the various States, the appointees to be selected from a number of names presented by the representative State societies, each State society at its annual meeting placing in nomination not more than two names for each appointment to be made.
3. Recognizing five years' actual practice at the time of the passage of the law as qualifying for the continuance of practice.
4. Empowering the Board of Examiners to examine and grant certificates to non-graduates, provided the candidates present satisfactory evidence of having had at least five calendar years of instruction.
5. These and all other examinations to be both oral and written, and candidates to be also subject to tests of practical skill.
6. Empowering the Boards to examine graduates in dentistry.
7. Prohibiting medical graduates without special qualifications practising dentistry.
8. Requiring medical graduates to have their special qualifications determined by the same tests as other non-graduates in dentistry (see No. 5).
9. Making failure to pass the required examination in any one branch sufficient cause for refusal to grant the certificate.
10. Making failure in the practical tests in either of the two general departments of dentistry work disqualification.
11. Expressing the opinion that examinations for the special degree in dentistry should be conducted by a Board of Examiners established by law in each State, instead of by Faculties as at present; and the belief that the power to grant degrees must at length become vested in Boards created for the purpose.

12. Conferring on State Boards the power to revoke, for cause, a certificate of qualification previously granted.

The secretary was directed to call the attention of the American Dental Association to the fact that a case involving the constitutionality of the law regulating the practice of dentistry in New Hampshire is now pending in the Supreme Court of the United States, and asking them to see to it that it does not go by default.

Dr. Koch, from the committee on dental colleges, reported the following schools, the diplomas of which this Association recommends that the State Boards indorse:

American College of Dental Surgery, Chicago, Ill.

Baltimore College of Dental Surgery, Baltimore, Md.

Boston Dental College, Boston, Mass.

Chicago College of Dental Surgery, Chicago, Ill.

College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.

Dental Department, Columbian University, Washington, D. C.

Dental Department of Northwestern University, Chicago, Ill.
(Now University Dental College.)

Dental Department of Southern Medical College, Atlanta, Ga.

Dental Department, University of Tennessee, Nashville, Tenn.

Harvard University, Dental Department, Cambridge, Mass.

Indiana Dental College, Indianapolis, Ind.

Kansas City Dental College, Kansas City, Mo.

Louisville College of Dentistry, Louisville, Ky.

Minnesota Hospital College, Dental Department, Minneapolis, Minn. (Defunct.)

Missouri Dental College, St. Louis, Mo.

New York College of Dentistry, New York, N. Y.

Ohio College of Dental Surgery, Cincinnati, O.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.

Philadelphia Dental College, Philadelphia, Pa.

School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.

St. Paul Medical College, Dental Department, St. Paul, Minn.
(Defunct.)

University of California, Dental Department, San Francisco, Cal.

Northwestern College of Dental Surgery, Chicago, Ill. (The diplomas of this college are discredited after 1889.)

State University of Iowa, Dental Department, Iowa City, Ia.

University of Maryland, Dental Department, Baltimore, Md.

University of Michigan, Dental Department, Ann Arbor, Mich.

University of Pennsylvania, Dental Department, Philadelphia, Pa.

Vanderbilt University, Dental Department, Nashville, Tenn.

The following officers were elected for the ensuing year: C. R. E. Koch, Chicago, Ill., President; L. C. Wasson, Topeka, Kan., Vice-President; J. H. Martindale, Minneapolis, Minn., Secretary and Treasurer. The president appointed as the Committee on Dental Colleges, Drs. Louis Jack, T. S. Waters, E. E. Hughes, W. P. Church, and J. H. Martindale.

On motion, the following committee was appointed to consider the advisability of holding the meetings at some other time and place than the annual meetings of the American Dental Association, with discretionary power in the matter: Drs. J. Taft, F. A. Levy, and S. A. Garber.

Adjourned to meet at the call of the president.

Editorial.

AMERICAN DENTAL ASSOCIATION.

THIS Association convened at the appointed time at Excelsior Springs, Mo. The attendance was large, but not equal to the expectations of the Western members, who had anticipated a gathering equal in numbers to that held at Minneapolis. That this was not so must be ascribed to the financial stringency prevailing throughout that section of the West. The East was poorly represented. This was to be expected. The distance, coupled with the extreme heat prevailing at the time, doubtless had an influence in keeping away many of those accustomed to taking part in these annual gatherings. Notwithstanding these drawbacks, the meeting was one of the most satisfactory that the Association has had in several years. This was mainly owing to the admirable planning of the Committee of Arrangements, in which they successfully avoided the unpleasant experiences at Saratoga last year. They arranged for two meetings a day, morning and evening, giving the afternoon to the National Association of Faculties and National Board of Examiners. This enabled these bodies to accomplish their work without conflict, and gave the members opportunity to take part in the proceedings of the parent organization.

The work of the Association as a whole cannot but be regarded as of superior character. Several of the sections were well prepared, and in one or two instances the reports were exceptionally good. That on "Dental Literature," Dr. C. N. Peirce, chairman, was especially noticeable for the collection of valuable matter and for its suggestive ideas; indeed, it may be regarded as a model in this respect.

The most important action was that of the appointment of a committee to act with the Southern Dental Association for an International Meeting to be held at Chicago in 1893. This action was not taken with the deliberation so essential in matters of this import. It seemed as though a fear existed that delay might arouse opposition; hence the apparently prearranged plan to force it through at a very early period of the meeting. This, if true, was a needless expenditure of effort, as there was, probably, no decided amount of opposition to a meeting in Chicago that year.

There was a marked improvement over recent years, in that politics formed no large part of the thoughts of the members of the Association. It was settled very early that the presidency should go to Chicago, and very properly to Dr. Harlan. This was carried out by a large majority to the satisfaction of all parties. The selection of a place of meeting for next year (1891) was left to the Committee of Arrangements. This course was taken owing to the difficulty in making terms with the railroads. The decision will probably lie between Niagara Falls and Saratoga, although there was a strong desire on the part of many Western members that some place on the Atlantic coast should be selected.

One of the most encouraging features of this meeting was the feeling manifested, privately and publicly, that the time had arrived when the American Dental Association must make a decided change in its management,—that the old mode of organization had had its day of usefulness. The present plan of permanent membership and delegates from local associations was conceded not to be a satisfactory mode of organization. It has taken the members a long time to reach this conclusion, and it is to be hoped that by another year this general feeling may be crystallized into form looking to a radical change in the constitution. No such composite body—a wheel within a wheel—can hope to preserve the confidence of the profession. What is needed is a thoroughly representative association closely connected with State and local organizations in the United States. The objections heretofore raised to this plan have no force, and should not stand in the way of a future reorganization making this Association fully in harmony and closely affiliated with subordinate societies within its jurisdiction. It is, perhaps, too soon to expect that the Southern will be permanently united with the American Dental Association; but that this will be the final result we feel assured. The multiplication of professional organizations is a positive evil, and the unification of scientific work should be the aim of all who desire to see sectionalism banished from professional effort.

The selection of Excelsior Springs proved a very happy one. Some of the weary and overheated travellers were disposed, as they approached it, to regard the place with misgivings, and expressed a fear that a mistake had been made. Further experience proved this hasty conclusion an error.

The company owning this tract with its numerous springs has expended a large sum in beautifying the grounds, naturally well adapted in grove and lawn for this purpose. The large hotel,

placed in the midst of these surroundings and provided with all the conveniences considered necessary for our modern civilization,—elevators, electric lights, etc.,—make it difficult to realize that this is located in the county from which Quantrell sallied forth in his raids, and where Jesse James terrorized for so long a period. Western Missouri is a garden-spot, not as yet appreciated by the people at large.

The untiring attentions of the managers of the Excelsior Springs Company made this meeting of the American Association one to be remembered by all who were so fortunate as to be present. Nothing was omitted by them to make the meeting a success, professionally as well as socially; and should it be necessary for the Association to go as far West again, no mistake would be made in selecting this spot in the border-land of Missouri and Kansas.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THIS Association convened at Excelsior Springs, Mo., August 4.

The report of subjects claiming its attention, and of general interest, is given in another part of this journal.

The meeting was an exceedingly harmonious one, notwithstanding previous attempts to stir up disturbing elements. The feeling seemed to prevail that the work to be done was to complete that of the previous year (1889), and in no way to unsettle the decisions of that meeting.

The problem of graded courses was met and thoroughly discussed; but as it was manifestly impossible to meet all the peculiar conditions surrounding the various schools, it was wisely concluded to simply recommend certain changes, leaving their adoption to the judgment of the separate faculties. A similar course was adopted in regard to the equalization of fees. The reasons for this action do not seem as clear as in the former case. It would seem that the time had arrived to make this mandatory, all the more as there appeared no good reason why this course should not have been adopted.

The schools belonging to the Association were generally represented by delegates,—a few by letter. The proceedings throughout manifested a healthful spirit of honest determination to advance the standard of dental education steadily and persistently, but, at the same time, with a due regard to the best interest of the students and colleges.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THIS important organization met at Excelsior Springs, Mo., August 4.

A large portion of the proceedings of this body are, necessarily, of a character unsuited for publication, as they involve frequently the interests of individuals and institutions.

This organization derives its power to act from the State Examiners, and has not intrinsically any legal status. Its power is, however, none the less on this account, as its orders go down to the State Boards, and through them they acquire legal force. This necessitates the greatest possible care in the consideration and administration of its work.

It is to be regretted that this was not manifested at the recent session. The attempt to arraign certain colleges for a supposed dereliction of duty was certainly outside of the general work of this organization. This would properly seem to be the province of the legally organized body, to whom all complaints should be relegated for examination.

The National Association, however, thought otherwise, and assumed to try these colleges in secret session and without notice to the supposed offenders. The charge originated from a single absent member of the Association, and was simply a general statement without a particle of evidence to substantiate it. Had this been presented, the charge was of such a puerile nature that no body of dignified character would for a moment have entertained it, certainly not without giving due notice to the parties implicated.

The present condition of affairs between the colleges and State Examiners is not altogether satisfactory, and it is imperative on both sides to move with caution. There is no necessity for antagonism; but if there is to be a repetition of this kind of crude legislation it will certainly fan the smothered embers into a flame of righteous indignation that can only end in injury to dental education in this country.

BIBLIOGRAPHY.

IRREGULARITIES OF THE TEETH AND THEIR TREATMENT. By
EUGENE S. TALBOT, M.D., D.D.S. Second Edition. 234
Illustrations. P. Blakiston, Son & Co., Philadelphia, 1890.

It is somewhat remarkable that the "Treatment of Irregularities" should have called forth in recent years a series of works from several of the best writers in the dental profession, while other, and seemingly more important, branches have been either wholly neglected or imperfectly described. This may be explained by the fact that it is one of the most difficult of subjects, and hence has an attraction for certain minds; and, further, the principles and practice governing it have received but little attention in the textbooks of former years. The result of this extended labor has been very satisfactory, as this very difficult subject has at last been placed on a scientific basis, creditable alike to the authors of the several works and an honor to a young profession.

The author of the present work has devoted years to the study of the principles governing the changes in development of teeth, and must be regarded as an authority on all points connected therewith.

In his introduction he says, "In presenting his views regarding the etiology of irregularities of the teeth and their correction, the author lays particular stress on underlying principles." That he is correct in this must be admitted by all with any experience. He has, therefore, devoted a large portion, indeed almost the entire book, to this, leaving, it may be thought by some, a too meagre portion to treatment.

The book contains 261 pages, divided under the head of "Etiology" into twelve chapters, and under "Treatment" into six. Chapters III. to VI. under the first head (Etiology) embrace the conclusions of the author after years of labor, and are scarcely to be overestimated. These should be read with care, as they abound with facts of the highest importance. Whether we agree or not with Dr. Talbot's conclusions, his facts deserve the closest attention. "Local Causes" cover twenty-six pages. The following quotation from page 145, relating to the extraction of the first permanent molar, deserves to be read and pondered by those who sacrifice these teeth with an indifference that borders on criminality. Coming from such an authority, it should have due weight with this class.

"The wholesale extraction of the first permanent molar in the past has, no doubt, caused arrest of development of the alveolar process as well as of the maxillary bones, for the process and jaws depend for their development largely on the functions of the teeth, their articulation and their motion stimulating nutrition and enlarging the arch.

"Some of the older dentists, whose skill is the result of routine rather than knowledge, are still to be found extracting four sound molars without the least thought of the consequences. . . . The author has observed in many cases the want of development of the alveolar process, and sometimes of the jaws, from the extraction of those teeth. This assertion is verified in those cases where the germ has not developed and the tooth is missing. More marked instances are those where three or four germs are wanting. . . . The horizontal portion of the lower jaw will be but imperfectly developed, because function, one of the most important means of development, is lost, and insufficient room is left for the second and third molars."

Space will not permit a more extended notice of this valuable book. It is a marked advance over the first edition, and will be invaluable as reference to the future investigator into the causes that underlie irregularity.

The practical man who cannot perceive a value in anything unless it details minutely manipulations in any particular branch, will rise from its perusal with a sense of disappointment; but this superficial view cannot be entertained by those who appreciate the fact that nothing of any practical value can be attained until there is a mastery of the principles governing the work. To the latter class Dr. Talbot's book will be a welcome addition to the repertory of records, happily now rapidly increasing.

A SYSTEM OF ORAL SURGERY. By JAMES E. GARRETSON, A.M., M.D., D.D.S. Fifth Edition. J. B. Lippincott Company, 1890.

The fact that a fifth edition of this work of Professor Garretson has been required is substantial evidence of its value. It has long been a standard work of reference, notwithstanding that its size has militated against its use as a text-book. It has been, in the opinion of many, overloaded with matter properly belonging to works on practice. Notwithstanding these admitted defects, it is the best work on Oral Surgery we have or are likely to have for some time to come.

THE THERAPEUTICAL APPLICATIONS OF PEROXIDE OF HYDROGEN AND GLYCOZONE. By CHARLES MARCHAND, Chemist. New York, 1890.

This monograph, prepared, as it has been, to introduce the hydrogen-peroxide as manufactured by the author, is, nevertheless, a valuable contribution on this subject, giving in a condensed form matter of value to every dentist.

While this agent is extensively used, it is doubtful whether the large majority fully appreciate its value. As a cleaner of pus-pockets it has no superior, and it should be in universal use. The subject is thoroughly treated in this pamphlet, and we can heartily recommend the profession to procure it and make use of the agent.

Domestic Correspondence.

TO THE EDITOR:

THE Colorado State Dental Association held its Fourth Annual Meeting in Denver, June 24 to 26. The following papers were read and discussed: "Dental Caries as influenced by Acids," Dr. H. A. Fynn, Central; "Dentistry of To-Day," Dr. M. H. Smith, Colorado Springs; "Microbes," Dr. A. H. Sawins, Denver; "Separating Teeth Previous to Filling,—Is it Advisable?" Dr. W. E. Griswold, Denver; "Does Attitude affect the Teeth?" Dr. C. F. Dodge, Leadville; "Fees," Dr. J. M. Porter, Denver; "Pulpless Teeth," Dr. H. P. Kelley, Denver; "Pyorrhœa," Dr. P. T. Smith, Denver.

Our next session will be held the first Tuesday in next June, and any brother practitioner who may be making a tour of the Rockies at that time in quest of health or for any other purpose will be cordially welcomed. Please remember that the number of dentists throughout the whole country who take an active, progressive part in Dental Associations is comparatively few, and when you are coming as far west as Missouri and Kansas do not forget to come on to Colorado, the Switzerland of America.

J. H. PARSONS, D.D.S.,
Corresponding Secretary.

BOULDER, COLORADO.

TO THE EDITOR :

THE Twenty-sixth Annual Meeting of the Missouri State Dental Association was held at Pertle Springs, Warrensburg, Mo., July 8, 9, 10, 11, 1890.

President Dr. Henry Fisher called the meeting to order.

The committee on resolutions to the memory of Dr. A. Noland presented the following, which were adopted by the Association :

TO THE MEMBERS OF THE MISSOURI STATE DENTAL ASSOCIATION :

WHEREAS, Death has removed from our ranks our beloved brother and co-laborer, Dr. A. Noland, of Monroe City, on the 22d of January, 1899; and

WHEREAS, Dr. Noland was a faithful student, an honored laborer, and worked hard to raise the standard of our profession in this State; therefore,

Resolved, That this Association mourn with sorrow the loss sustained.

Resolved, That this Association hereby tender his bereaved family its heartfelt sympathies and condolence in this their sad bereavement, and may that God in whom he so implicitly trusted speak peace to their sad hearts in their distress.

Resolved, That a copy of these resolutions be sent to the family of our deceased brother and to the dental journals for publication.

B. Q. STEVENS,
G. M. RISLEY,
JAS. L. LEAVEL,
Committee.

The committee to draft resolutions on the death of Dr. Judd presented the following, which were adopted :

WHEREAS, The recent death of Dr. Homer Judd brings to mind his activity and influence in the organization of this Association, and his subsequent labor in extending its usefulness, to the great benefit of the profession in this State; and,

WHEREAS, His noble character, energy, and his literary attainments entitle him to an exalted place on the scroll of deceased members; therefore,

Resolved, That in the death of Dr. Judd this Association has lost an honored member, whose professional character and example we emulate, and whose memory we ever hold dear.

Resolved, That the heartfelt sympathy and condolence of this Association be tendered the family of our departed brother in their sad bereavement.

Resolved, That a copy of these resolutions be sent to the family and to the dental journals for publication.

W. H. EAMES,
C. W. SPALDING,
J. C. GOODRICH,
Committee.

PERTLE SPRINGS, July 9, 1890.

Drs. Price, T. W. Reed, and F. Swap were appointed a committee to draft suitable farewell resolutions to Dr. Spalding, and reported as follows :

MR. PRESIDENT AND MEMBERS OF THE MISSOURI STATE DENTAL ASSOCIATION:

GENTLEMEN,—We, your committee appointed to draft resolutions expressive of the pleasure of this Association afforded by the presence of Dr. C. W. Spalding, and of regret that he will soon sever his social connections with us, most respectfully submit the following resolutions:

Resolved, That with a full appreciation of Dr. Spalding's virtues as a gentleman, his high moral character as a man, his eminent qualifications and invaluable counsel as a professional brother, we tender to him our most sincere thanks for his presence at this meeting (probably the last time we shall all meet him on this earth); we deeply regret that he should feel it necessary to sever his social connection with us.

Resolved, That we fully realize the fact that no one has done more than he to advance the standard of our profession and the best interests of this Association, which will ever, by us, be remembered and cherished with grateful hearts.

Resolved, That in his departure he takes with him our most earnest wishes for his success, prosperity, and happiness; and may kind Providence ever watch over, guide, and shield him.

Resolved, That these resolutions be spread upon the records of this Association, a copy, properly engrossed, be presented to Dr. Spalding, and one sent to each of the dental journals for publication.

JAS. A. PRICE,
T. W. REED,
F. SWAP,
Committee.

The election of officers resulted as follows: President, Dr. J. F. McWilliams, Mexico; Vice-President, Dr. Geo. L. Shephard, Sedalia; Second Vice-President, Dr. W. H. Buckley, Liberty; Recording Secretary, Dr. John G. Harper; Corresponding Secretary, Dr. William Conrad; Treasurer, Dr. James A. Price, Weston.

Board of Censors.—Drs. J. G. Hollingworth, W. L. Reed, Chas. L. Hungerford.

Committee on Ethics.—Drs. N. H. Gaines, C. V. Huff, J. W. Aikin.

Publication Committee.—Drs. E. E. Shattuck, H. S. Lowry, W. E. Tucker, Law; Jas. A. Price, Weston.

Committee on New Appliances.—Dr. J. M. Austin, St. Joseph.

Executive Committee.—Dr. William Conrad, Dr. Henry Fisher, and Dr. J. W. Whipple, St. Louis.

Supervisor of Clinics.—Dr. A. J. Prosser, St. Louis.

Next place of meeting, Louisiana, Mo., first Tuesday after July 4, 1891.

WM. CONRAD,
Corresponding Secretary.

321 N. GRAND AVENUE.

Current News.

As Dr. R. B. Adair said in the Georgia State Dental Society, we cannot all be microscopists; we have to accept the evidences placed before us by conscientious scientific men, who, having demonstrated the facts to themselves, give us their positive testimony, throwing in such a flood of light that what was the most obscure subject we had to deal with now becomes the most clear and comprehensible.

DR. B. H. CATCHING thinks no "dental exhibit" should be considered complete which does not include samples of the dental journals and copies of standard and recent publications, the literature of his profession being as essential to the true dentist as the instruments and appliances constituting the usual exhibit of dental associations.

DR. WARDLAW says that his attention was first seriously drawn to the "germ theory" by the remarks of Dr. Sudduth after the display of photo-micrographs at the Louisville meeting.

A DENTIST's life is better worth living after he has learned to operate by looking in a mouth-mirror and given up bending over and under to see into the cavity.

W. C. BROWNE.

DR. B. H. CATCHING fills roots with oxide of zinc and boric acid, equal parts, mixed with chloride of zinc, a mixture which does not set rapidly, giving time for careful, deliberate work, and securing the lasting benefits of the acid.

DR. W. C. BROWNE thinks that students who have graduated and passed the State Examining Board should at once be made members of their State Society without payment of any initiation fee. If thus identified with it from the beginning, they will probably always remain members. Otherwise they may drift away and perhaps never be heard of again.

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No. 10.

Original Communications.¹

THE MESSAGE TREATMENT IN DENTAL PATHOLOGICAL CONDITIONS.²

BY W. F. REHFUSS, D.D.S.

THE therapeutic value of the massage treatment in various dental pathological conditions has not been recognized nor appreciated.

That it does possess important and reliable therapeutic qualities, which eventually must recommend its adoption, is not to be disputed. Its adaptability and success in dentistry must necessarily depend on the skill, tact, and judgment exercised by the operator in its application.

The area of our operations is limited to the mouth,—relatively a small field for the practice of massage in comparison with other portions of the body, as on the leg or arm, where massage is performed with ease.

When we consider the fact of the mucous membrane of the mouth being more delicate than the epidermis of the arm or leg, in conjunction with the small area for manipulation, the dentist is

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read at a meeting of the Odontological Society of Pennsylvania, June, 1890.

confronted with a combination of difficulties that will require of him a greater degree of skill and care in manipulating than ordinarily, to derive the desired therapeutic benefit of the treatment, which, like all operations or treatments, can be learned and appreciated only by experience and practice.

Massage is derived from the Greek, *masso*, I knead, or handle; Arabic, *mass*, to press softly. It is a term generally accepted to signify a series of procedures which are best accomplished with the hands, such as friction, kneading, manipulating, rolling, and percussion of the external tissues of the body in a variety of ways, with either a curative, palliative, or hygienic object in view. In some crude form or other, massage has been practised from time immemorial by savage and civilized people. Those who have recorded their knowledge and appreciation of the value of massage have in almost every instance been men of eminence and renown, either as physicians, philosophers, poets, or historians, from the days of Hippocrates and Homer, who mentions it in the "Odyssey," eight hundred or one thousand years B.C., down to those of S. Weir Mitchell and Billroth in modern times.

Herodotus, the father of history, and others in the fifth century B.C. mention the advantages of external treatment of the human body, and, about a century later, the first rational information and treatise on this subject appeared in the aphorisms of Hippocrates.

And so on, through the ages, we find the subject mentioned in history and its use advocated by renowned men. Asclepiades, a celebrated Greek physician, used it in the years 128-156 B.C., and his popularity with the Romans was due to his success with it. It is a fact of history that Cicero, Julius Cæsar, and Martialis, of literary fame, were all warm advocates of its virtues.

The Greeks, Romans, Indians, Chinese, Japanese, and, in fact, the people of all nations of the world, have used massage in some form.

To Peter Henrik Link, of Sweden, credit is given for having instituted what are now well known as the Swedish movement cures.

In 1813 the Royal Central Institution was established at Stockholm, with the patronage of the Swedish government, in order that Link might practise and teach his system of massage and gymnastics. Critics endeavored to prove that his methods were but a revival of that of the Brahmins of India, of the Egyptian priests, of Asclepiades, of Hippocrates, Cleus, and other noted ancient

physicians, and that all of the movements that Link advocated were described in an ancient book of the Chinese, the "Cong-Fou of the Tao'-Sse'." However, the merits of his system were proven by the establishment of institutions, similar to that at Stockholm, in other parts of Sweden and in other countries.

Many modern physicians of renown have, by their researches and zeal in advocating its therapeutic value, given the subject such a stimulus that its field of usefulness has been recognized and gradually increased, until it has found its way into general and special branches of medicine with success, and often when other means have failed. It only now remains for the dentist to adopt it in dental pathological conditions to make its application universal in the treatment of all portions of the body.

The Swedish method of manual treatment consists of different movements, termed Swedish movements, the object of which is to exercise the natural functions of a muscle, set of muscles, articulation, or limb, with the beneficial object to overcome existing unnatural or pathological conditions, and they may be either passive or active.

Under the head of passive movements we find the massage treatment classed. In the treatment or mode of application of massage we must, in a measure, follow the scientific methods of application advised and adopted by leading authorities on the subject in their treatment or manipulation of other parts of the body.

My especial methods of massage are based on those practised by Dr. Mezger, of Amsterdam; these he divides into four different manipulations, viz.:

First, Effleurage (centripetal stroking). According to Kurre Ostrom, this manipulation, performed on the arm or leg, consists of centripetal stroking (towards the heart). The stroking is performed with the palm or radial portion of the hand, tips of the fingers, or thumb. The movement is similar to a carpenter's plane, a forward and backward motion.

Secondly, Frictions, which are strong circular manipulations given with the thumb or tips of the fingers.

Thirdly, Pétrissage (kneading). This manipulation is performed generally by the thumb or index-finger. In general massage, an operator picks up a special tissue, muscle, or tendon, and, placing one finger on each side of the part, proceeds in centripetal motion with a firm pressure. The palm of the hand may also be used.

Fourthly, *Tapotement* (percussion), which is divided into four kinds:

- (a) *Clapping*, performed with the palms of the hands.
- (b) *Hacking*, with the ulnar border of the hand.
- (c) *Punctation*, with the tips of the fingers.
- (d) *Beating*, with the clinched hand.

In a modified form these four manipulations are applicable to massage on the oral mucous membrane.

In illustrating the mode of performing dental massage I will take a typical case, and describe the manipulations and *modus operandi* adopted in the treatment of pathological conditions of that class.

First, Our diagnosis must be accurate, for upon that depends the nature of the manipulations, their force and frequency, and the length of time during which they are employed.

We will consider a case of acute periostitis, associated with pulpitis, caused by deposition of tartar around the neck of the tooth, and also from long-standing caries.

The periostitis developed and was followed by an acute attack of pulpitis. The tooth was a superior left first molar. The position of the manipulator is an important matter. In performing manipulations on the left side, the manipulator stands on the right side of his patient and uses the thumb and fingers of the right hand for manipulating, using the left-hand for the application of a napkin when necessary; and in manipulating the right side he stands to the left of his patient, using the fingers of his left hand if he finds that standing on the right side gives him a cramped and unnatural position.

The position of the hand is also of consequence. The operator uses the fore- or middle-finger, or both, for manipulating, supporting the thumb on the adjacent teeth, as a pivotal or fixed point, and it serves as a support and guide in directing the finger in the manipulating. The forefinger of the other hand serves to hold up the corner of the lip, if necessary. The thumb is used to perform massage, while the four fingers of the same hand rest on or grasp the cheek, also as a guide and support.

The introductory massage consists of *effleurage*,—centripetal stroking around the affected part, and not *directly* over the seat of inflammation. When swelling and pain are present, the centripetal stroking is commenced at the central incisors on the healthy tissue, using the thumb, fore-, or middle-finger for stroking. Continue this gentle stroking and gradually work towards the inflamed membrane. The healthy tissue beyond and around the second molar

and wisdom tooth should be similarly treated. Besides the soothing effect, which enables us to approach gradually near the seat of the *periostitis*, and avoid causing much pain, the circulation is pushed along more rapidly, so that exudations are carried off more easily. It is a mistake to commence massage immediately upon an inflamed tissue. If we were to consult the patient's feelings, they would undoubtedly indicate to us to commence at a comfortable distance from the seat of inflammation, and, as has been stated, approach it gradually as the pain lessens and the swelling abates through the open absorbents. This removes the pressure from the terminal nerve filaments, and pain is relieved.

The experiments of Glax and Klemensiewicz have proved that in an inflamed region the lymph spaces are so choked up by the exudations and products of inflammation poured into them, in consequence of the abnormal activity of the vascular walls, that their outlets are insufficient; the efferent vessels are thus compressed and the circulation impeded, so that when we exert pressure upon this inflamed region, already suffering under partial compression of its efferent vessels, it may injure more than benefit. We can now use gentle stroking directly over the inflamed membrane, and follow this by deep manipulation, proceeding in the same manner as before,—gradually from the healthy tissue towards the seat of inflammation.

The greatest pressure should be towards the peripheral end and anterior and posterior to the inflamed membrane, and by thus gradually approaching it there is produced an anæsthetic effect, which lessens the pain; and comparatively firm pressure on the part can now be produced, which but a short time previous was very sensitive to the touch. The object of the *effleurage* (stroking) is to increase the circulation in the blood-vessels and lymphatics. When this stage of the operation has been reached, recourse to "*friction*" can be had, stroking in circles, starting from the anterior part of the mouth and manipulating towards the posterior portion, using the forefinger. This causes a loosening of the tissues, and the effusions and exudations to be spread over a greater surface and brought more easily into contact with the veins and lymphatics, and these are aided in their resorptive functions by the pressure and friction of massage.

After applying friction we again have recourse to centripetal stroking, which is always used before and after friction.

We now come to the third stage in manipulating,—applying *pétrissage* (kneading). This manipulation consists of a series of

small circular movements performed by the forefinger or thumb, proceeding from the anterior to the posterior portion of the mouth; and it differs from friction, because in the latter very little pressure is exerted, friction being merely circular stroking manipulations, while *pétrissage* (kneading) consists of friction with an additional pressure. After performing *effleurage* and friction, I use a modified form of kneading, discarding the circular movements, as I find that by using plain centripetal stroking, and giving an intermittent pressure, kneading is more easily and efficiently accomplished. The gum now has a resisting surface—slightly roughened. By pressing the finger along the gum an intermittent jarring pressure is produced similar to that felt by the finger on a piece of rubber, on which, without pressing, a resisting and not a sliding motion is accomplished. It is unnecessary to use much pressure with this mode, as each resistance develops the succeeding pressure. *Tapotement* is the last manipulation. Its application was a difficulty not easily overcome, therefore I devised a small appliance for use in the dental hand-piece, and thereby accomplished the desired manipulation, which is a combination of clapping, hacking, and beating. The appliance consists of a mandrel or shaft of the same gauge as a bur, to fit in the hand-piece of the dental engine, at the other end is a small metal hub, and attached to the hub, at right-angle with the mandrel, are three pieces of elastic tubing, one-eighth inch in diameter and one inch in length, arranged like the spokes of a wheel, radiating from the centre. When this appliance is revolved in the hand-piece, the elasticity and flaccidity of the small tubes decrease the circumference, on account of the centripetal motion, and by holding it against the gum a light blow is given by each tube, the intensity of which is regulated by the speed of the engine. The object of this form of percussion is to reach the superficial vessels, and cause an influx of blood to the part. The aim of frictions and kneading is to squeeze the pathologically changed parts, and by carrying the diseased tissue into the healthy substances, expose them to a firm stroking, so as to have exudations absorbed by the lymphatics. It is a difficult matter to definitely state the length of time massage should be employed in manipulating the gum. I work from three to fifteen minutes, according to the object I wish to accomplish. It would require about eight minutes to perform the manipulations as just described.

The importance of extreme caution and gentleness in manipulating is not to be overrated, for therein lies the success of the

treatment. By frequently questioning the patient we can learn whether the manipulating does or does not cause pain, and regulate the intensity accordingly, and thereby accomplish some relief and benefit; whereas, if the manipulator used undue strength upon such a sensitive tissue as the oral mucous membrane, he would injure rather than benefit the part by his treatment.

I will now consider the physiological effects of massage. Where there is an anæmic condition of the mucous membrane, the importance of some measure to overcome the inactivity and poor nourishment is not to be overestimated. The objective point is to attract the circulation to the parts where the anæmic condition exists. This is done by intermittent pressure of massage, which exerts a simultaneous influence upon all the tissues within its reach, the blood-vessels, lymphatics, nerves, etc. It causes a more rapid absorption of the products of waste, and stimulates and hastens the sluggish circulation. Gentle stroking, though soothing, is in a physiological sense a mild irritant to the superficial vessels. The explanation of the mechanical effect of centripetal stroking is to push along the circulation, and the collapsing vessels cause a suction that aids the returning current.

The outgoing or arterial circulation in the part thus treated is momentarily impeded, an accumulation of blood and a dilatation of the arterial walls taking place when pressure is used. On removing it, the increased volume of blood from accumulation rushes onward with greater force, owing to its sudden liberation into the partially emptied continuations of the arteries.

It is an accredited fact that in heat and massage we have two valuable remedial agents in the treatment of dental pathological conditions. More benefit can, no doubt, be derived from their use than is now accorded them. Moderate heat causes a fluxion of blood to the part, and dilates the vessels. It acts like cold if of a high temperature, causing a contraction of the vessels. To gain the desired therapeutic effect in the application of heat, the theory is to apply it of a moderate degree, 80° or 90° F., to the seat of the inflammation, and gradually increase the temperature.

The principle of massage is the same, for intermittent compression of massage causes a mechanical contraction and dilatation of all of the blood-vessels,—arterial, capillary, venous, and lymphatics,—at every application, from sixty times a minute and upward, and this is certainly sixty times oftener than could be caused by the variations of heat in the same time. The aid to the returning circulation by being pushed along by massage is much greater than that

caused by heat, which has a tendency to enlarge the area of stasis, and the exudations are dispersed more rapidly than by heat. In the application of cold, pain and swelling can be reduced in inflammation, but instead of increasing the circulation in the part and hastening the returning current of blood as by massage, we do the reverse, the flow of blood is lessened, the veins and lymphatics are contracted, and the effused products are not easily absorbed, because of this contraction of the vessels, and of all the other tissues. Another danger of cold applications is that they may convert inflammation into gangrene, or may produce sloughing.

The dental pathological conditions in which massage is employed will now be considered, and at what stage it is beneficial. It must be remembered that, according to the requirements of each individual case, massage may be of primary or secondary importance, of no value at all, or even injurious. Briefly stated, it is beneficial and useful in local disturbances of the circulation and nutrition and of inflammations in their incipient stages or after the acute symptoms have passed away, as at the commencement of periostitis, gingivitis, at certain stages of acute or chronic *alveolar* abscesses, etc. Local congestion and irritation can be relieved by massage. In chronic *alveolar* abscesses the languid circulation can be aroused, which will aid the absorption of the products of waste. In the class of cases under consideration we have a sinus present, and a continual discharge of pus. It is assumed that the nerve-canals have been rendered thoroughly aseptic, and that no serumal or salivary deposits on the root or necrosis of the alveolus are present.

The condition described is a passive one, the tissue outside of the boundary of pus is torpid. If the granulations be allowed to remain in this condition, they may contract and consolidate in time, causing the sinus to close and the discharge of pus to cease; but we find from clinical experience that the tendency is to take on a retrograde action, gradually involving the surrounding tissue and alveolar process. We must take advantage of this passive stage, and produce absorption of some of these products of inflammation, and cause a consolidation or formation of new granulations. By massage an increased blood-supply is attracted to the parts, which removes the stasis, stimulates and produces activity generally; the tendency is to absorb the products of waste and the effusions. In conjunction with antiseptic treatment by injections, the prognosis is favorable. In acute *alveolar* abscesses, after the discharge has ceased, and the healing process commenced, massage is valuable, as the progress is more rapid than when massage is not used; but the

manipulations should not be too vigorous; two or three treatments suffice in these cases.

Often a patient complains that in a tooth which has been abscessed but which is apparently cured, as the sinus has closed and the discharge of pus ceased, there is a sense of tenderness and soreness when the finger is pressed on the gum over the root of the tooth. This I have noticed is particularly the case in bicuspid and canines. There is a thickening and somewhat flabby condition of the tissues around the roots of the affected tooth. In several cases of this kind I have, by massage, in about three to six treatments, entirely removed such soreness to touch. The treatment of diseases of the periodontal membrane, by this process, depends upon the severity of the inflammation. In the incipient stages the object is to abate the swelling, remove the stasis in the circulation, disseminate the products of inflammation, and to restore the normal circulation. The massage, though gentle at first, should be quite vigorous, as a counter-irritant effect is desired in the majority of cases. I have treated a number of cases of apical periostitis, due to the products of decomposition of the pulp penetrating the apical space, causing inflammation and the formation of gases. In these cases the usual treatment of opening the pulp-chamber, removing the products of decomposition, giving vent to the gas, and then inserting an antiseptic dressing in the canal was pursued, but the pain still persisted in a varying degree, but not as severe as before the treatment. Massage in each instance relieved pain and made the recovery more rapid than is usual in these cases. In various forms of periostitis, due to pulp inflammation, direct irritation of the pericementum, and other causes, I use only moderate massage. The objective point is to produce a slight counter-irritant effect, and to bring the blood into more active circulation, so that when medicines, such as tincture aconite, tincture iodine, chloroform, etc., are applied to the gum they are more easily absorbed. In fact, I always manipulate the gum before applying to it any remedies, as by massage an increased blood-supply is attracted to the parts, and consequently the amount of the medicine absorbed and carried to the seat of the inflammation is greater than ordinarily. In the treatment of periostitis by massage lancing is not necessary unless the local congestion is considerable; then it is advisable to use massage first, which increases the blood-supply and also removes stasis; therefore when lancing is performed the consequent flow of blood is greater and continues longer.

When the tendency of the inflammation is to the formation of pus, we can hasten it by vigorous application of the treatment, which

softens the tissues and also, by reason of the heat created, tends to direct the pointing of the abscess at that part of the gum.

The treatment of dental neuralgia by massage depends upon the predisposing cause. If of local origin, due to the irritation of the periosteum of one or more teeth, climatic changes, etc., massage is usually efficacious, otherwise systemic remedies are indicated.

In anæmic conditions of the oral mucous membrane of persons who are of a neuralgic diathesis, massage is beneficial, because it increases and stimulates the local blood-supply. In the treatment of pericementitis and deep-seated pulpitis, much reliance is usually placed in the therapeutic value of counter-irritations. In this respect massage possesses virtues of great efficacy, because by it counter-irritation may be made as slight or vigorous as desirable. When we wish to produce strong counter-irritation, the manipulations are continued with more than usual vigor until a slight oozing of blood is produced by the rupture of the blood-vessels of the mucous membrane. In some persons the oral mucous membrane is more delicate, and therefore more prone to irritation than in others. When such is the case, before commencing the manipulations, the gum should first be rubbed with vaseline, lanoline, or albolene, but if the local irritation produced becomes annoying or painful, tincture krameria, acidi tannici and glycerin, or any astringent or demulcent wash will allay the inflammation. If care and gentleness are exercised in manipulating this will not be necessary.

In conclusion, I do not claim massage to be a specific remedy in the treatment of all dental pathological conditions, nor do I advise its use to the exclusion of all other remedies; but its application in the treatment within the past fourteen months of about one hundred and fifty cases, including pericementitis in various stages, acute and chronic alveolar abscesses, deep-seated pulpitis, various pathological conditions of the oral mucous membrane, etc., either alone or in combination with other remedies, and with more than average successful results, has proven to me that massage is and should be, if properly applied, a valuable adjunct to our many successful means of combating dental diseases.

OBSERVATIONS ON PREPARATION, DISCRIMINATION,
PREVENTION, REPARATION, ASSOCIATION, AND PUB-
LICATION AS APPLIED TO DENTISTRY.¹

BY CHARLES B. ATKINSON, D.D.S.

PREPARATION includes selection as a first postulate, and directs attention to a consideration of the qualities essential and desirable for a dentist's success.²

Probably gentleness in handling the patient does more to increase a practice than any other single quality. Cleanliness of person and office are important elements. These, with courteous manners, have built more practices than the higher and more useful possessions of knowledge and skill.

Nevertheless patients respect a firm stand taken on a principle of practice, and indeed expect of the operator a directive force of character, to which they readily submit.

Clear and prompt diagnosis is not a quality given to all of us, nor can it be altogether acquired. Some of his qualifications the dentist must have born in him.

Comprehension, judgment, decision, firmness, ingenuity, persistence, neatness, patience, honesty, and modesty are qualities that can be fostered, but the bases of which must be bred in the man to effectively develop.

Education, manipulation, conversation are directly resultant on organized effort, and more immediately come under the possibility of acquisition.

The inbred qualities are especially those which control the possibility of possession of diagnostic ability.

Routine following of formulated aspects of disease does not constitute diagnosis. For which are required comprehension, perspicacity, and judgment pre-eminently.

Education necessarily attends these as taking partly the place of experience. Proper education would take the place of experience, as it should include in its scope not only extended clinical teaching, which of itself is experience, but a large range of cases in practice.

¹ Read before the New York Odontological Society, May, 1890.

² Well considered by Dr. Dean in *Dental Cosmos*, November and December, 1889.

Manual training is important to a great degree. Delicacy of manipulation is required so constantly in proper dental operations that the schooling of the hands can hardly be pursued too far.

The long-continued routine drawing in an artist's training tells when he comes to use the brush in his professional work; so also the years of exercises required of a pianist lay the habit of accuracy and delicacy of touch and control over the hands without which execution would be impossible. Dr. Barrett¹ has well considered this subject of manual training, but it is too vastly important not to be urged again and again.

Previous private pupilage is of great importance to a proper candidate for dental education.

Not all, by any means, of those who undertake the study of the profession are possessed of the proper inborn capacity, mental and physical, that are absolutely necessary to the only success to which a professional man should aspire. General fundamental education and technical training of the hands and eyes should come first, and pupilage follow, and it is here the weeding of improper material should come.

An uncouth, slovenly, immoral pupil, when proved to be incorrigible, should be dropped at once, as lacking some qualities necessary, and possessing others inimical, to continuing the study of dentistry.

Thus would material of proper quality be presented to the colleges for the necessary drill on text-book matter, and the more extended clinical opportunities of the infirmary, when has been reached a point of preparation of the moral, manual, and mental possibilities that invites rapid development to a degree of professional capacity very seldom reached under existing plans of preparation.

College education would advance to meet the demand, and American dentistry would again occupy the position before the world to which it has a right, but which it is threatened it will lose because of the indifference of the profession to the admission of unworthy members. The world has taken cognizance of our slack methods, and we have been aroused to a contemplation of what can be done to meet the issues before us. The enactment of laws governing the incoming operators has been secured, meeting more or less this phase of preparation.

These are steps to an end, all of them, and the end should be

¹ *Western Dental Journal*, May, 1889, "The Master and his Servants," also recently presented by Dr. Kirk before the First District Dental Society.

pushed higher and higher as our appreciation of the possibilities before us extends.

There are three especially weak points in most college curricula,—

Chemistry (underlying as it does all adequate comprehension of tissual alteration, and also of the medicines and materials we use) should constitute a first, broad, intimate, and intelligently-directed course. The first year devoted solely to chemistry and anatomy, didactic and practical, would be immensely beneficial to the student throughout his further course, both undergraduate and practising.

Diagnosis seems to be treated almost entirely as dependent on apparent surface indications. But, then, do not the majority of dentists consider extraction, the supply of crowns or teeth on plates, plastic and gold filling to embrace the practice of dentistry? This is perhaps natural, for what does the student notice?—a patient presents in the infirmary, the superintending demonstrator consults his pocket and locates and determines certain work to be done, —filling, crown, or plate,—and the patient is turned over to the student to carry out the programme. What is the result? The student's mind is at once directed to the mechanical aspects of the case, and his interest concentrated thereon. He is not led to feel responsible for discriminating as to the conditions. His responsibility ceases when he has placed a filling, crown, or plate that passes inspection. His professional pride has not even been aroused, if indeed awakened. Might not those eligible to operate for the day be called one by one to diagnosticate the cases presenting, and thus show their competence of discrimination first, then to proceed with pride and stimulated observation to justify their positions?

Do surgical aspects present to the student any part of his practical training? Is it of much avail for the class to file by the operating-chair and be told, this is a case of epulis, carcinoma, pyorrhœa alveolaris, or some other surgical aspect of oral lesion?

Should not he be asked to diagnosticate the case, and then, or subsequently, to justify himself, or be set right?

The etiology of dental lesions is worthy of more extended consideration than it receives in college instruction. Investigation by the student is not encouraged, nor indeed are time and facilities at his disposal for such purpose.

The period of preparation is all too short to leave room to combat inconsistencies or uncertainties presented for memorizing that the examination may be passed.

One grave objection to making charges for infirmary operations

is the low estimate it insensibly cultivates in the minds of the student of the money value of the services he is rendering. If this system must continue, and the abolishing of all charges is not possible, then the amount is certainly unwise for the student to learn.

Perhaps the actual cost of materials used in a college infirmary may be a legitimate charge, but to put a profit thereon seems undignified and unprofessional, as well as illiberal, and, if known to the student, is inimical to the cultivation of the moral tone that urges him to value his services as skilled professional efforts and not the work of an artisan to be charged for as so much material and time consumed, in which consideration he rapidly drifts away from an appreciation of the skill, anxiety, forbearance, judgment, moral and magnetic force, that all go to make each operation possess a value of its own, distinct from any rule of charges.

This one point is prominently before us, and when so-called extraordinary fees (extraordinary to those whose competence does not reach perhaps even what should be ordinary degree) are known to be asked for what might fairly be termed extraordinary operations, surprise and criticism are freely expressed. Who but the individual operator knows the cost of performing personal service?

Discrimination as developed and directed by a proper, broad preparation includes diagnosis, prognosis, and treatment (therapeutics and operation), and marks itself as essential to successful practice. The direction during preparation to the development of discrimination, like manual training, can probably never be overdone.

Discrimination is necessary first to effectively apply effort by reason of a proper predicate being taken from which to determine the course to pursue if

Preventive; then advice as to aseptic conditions and personal conduct of the patient in the care of the mouth and teeth and general health, more particularly with regard to children, seems to about cover the ground. The purpose of prevention would well be served by popular instruction through society publication as to which diseased conditions of common occurrence are amenable to treatment, with a concise but clear statement of their salient symptoms; added to which might be a reference to such operations and appliances as the society endorsed. Thus would the public be brought to some adequate appreciation of dental operations, and be prepared to resist needless mutilation and to seek treatment instead of neglecting it.

If discrimination points to reparative effort, then, as long as

present circumstances and conditions prevail, the real work of the dentist is called for. Treatment of diseased, and complete or partial removal of effete, useless, irreparable, or redundant hard or soft tissue presents its special indications for medicinal or surgical interference, whether stimulation, depletion, compression, distention, irritation, coagulation, escharotization, solution, injection, aspiration, interruption, cessation, incision, excision, amputation, or extraction.¹

Reproduction may be induced through these applications of preparation, and may become an intermediate stage between treatment and substitution. Reparation includes substitution of lost tissue by filling of mechanical or chemical character (the highest expressions of these efforts, especially concerning defective tooth-structure, appear to be oxyphosphate filling with porcelain or metal wearing surfaces, gold to a limited extent only, crowning inside of collars, immovable and movable bridges with and without porcelain gums, and carved continuous gum-plates). Other efforts would embrace sponge-grafting, the implantation of teeth, flexible and resistant supply of deficient functioning tissue (i.e., artificial vela), and artistic restoration of deficient appearances. The apostle of these last-named efforts is well known in this society.

Association brings the detail of these several opportunities for beneficent employment within the possibility of comparison, discussion, and adjustment of antagonistic complexions, and opens the opportunity to promulgation of discoveries, real or assumed, so that side-lights of mental action may be directed upon the presented matter, and its usefulness be extended and intensified. So much depends upon the application of facts, theories, methods, and appliances, that presentment to general consideration and discussion is of vital import to even the originator of them.

Dissension has been permitted too long in associations. The effort is often to vanquish the presenter of new matter as a polem-

¹ This is intended to indicate the need for a better understanding of the *principles* of medicinal action, rather than empiric use of specific substances, topically or constitutionally; for instance, *depletion* may be by catharsis, capillary phlebotomy, diaphoresis, emesis, diuresis, vesication, or reduction of heart-action by the specific action of drugs inhaled, per gastrum or hypodermically. *Stimulation* may be by irritation, friction, fomentation, or augmentation of heart-action through specific drugs. *Tonization* may be by food as ordinarily understood, and food such as pharmacy presents to us, also by cleanliness, clothing (especially in such localities as the knees, armpits, abdomen, and chest), and by exercise.

ical contest, and the proper purpose of association lost sight of,—i.e., intensification of facts, elision of redundant aspects of a question, correction of misinterpretations, and specific statement of the status of opinion of the association on the questions dealt with, fearlessly presented and published.

Mere prominence of an individual because of his reception as an essayist before a society is an unworthy object for associations to foster. The majority, if held responsible for endorsement of views presented and accepted, would be chary of ill-considered decision.

Prepared discussion can best establish this status of opinion and that which appeals to a majority of assembled minds it is fair to believe worthy of credence, acceptance, and experiment, from which would arise further elaboration of theory and fact onward and upward to an ever-advancing goal for ambition to reach towards.

Associations might properly announce periodically certain theories as held, and invite *pro* and *con* discussion of them from general sources, embracing as fully as possible all presentments of theories, facts, methods, materials, and appliances offered up to the time of the call for papers and prepared discussion to meet the issue.

This could be based on an invitation to present positions and propositions, and suggestions, and in addition on what may be gleaned from society reports and journal articles.

The result of this called discussion could be expected to permit an arrangement as nearly complete as may be of all bases for practice before the profession, and something like a competent and regulated effort at compiling a system of American dentistry be possible.

The assembling of matter in the transactions of a congress of all associations would gather periodically everything presented anywhere and correlate it in such serial connected order as to render investigation and reference easier as well as broader, and such selected matter as secured the endorsement of the congress would have a value and power unknown to most of the methods we now employ.

The elision of the individuality as supreme in our gatherings is strongly indicated when we consider the antagonism in methods for nearly identical operations.

Investigation being directed to unsettled issues, the concentration of mental effort, not being wasted in considering ground already proved, would secure positive results speedily attained.

Publication naturally closely follows association deliberations, and makes them effective on a more extended basis. The record

thus spread abroad furnishes sign-boards for other mentalities to move by, and cumulative treading of these paths marks them plainer and plainer, and they thus are made easier to follow, and become highways of recognized truth from certain starting-points to definite destinations. They may require repaving from time to time, but this is discovered and directed by those traversing the road, and the corrections easily applied at slight expense of effort because of the definiteness and circumscribing of the road made possible from the common intent and effort used in its construction.

Publication, as at present before us, appears to present three points for improvement:

First. Editing by a board of three to seven practising dentists, perhaps under one supervising chief, instead of being at the discretion of a single censor, in some cases not even a dentist.

Second. The proof-reading of but a very few journals is above reproach.

Third. Liberal management that would promptly meet the press of matter occasion brings by adequate increase of pages for its accommodation. This would present related matter together for comparison and collateral consideration. Papers are often written to meet issues which time changes the aspect of, and were the publication of them delayed for even one month their relevance to their original incitement would be weakened and perhaps lost.

This is more particularly true of such subjects as are considered in this paper and those embracing organization, ways and means, propositions for experiment, and such as relate to system rather than to scientific facts and methods and appliances, although here the matter of establishing priority alone would seem to urge immediate publication.

In this connection Dr. Ottolengui¹ has presented a consistently arranged scheme, which is well worth serious consideration. To its recommendations is here added that the society reports be published as they occur, in the, let us say, *INTERNATIONAL DENTAL JOURNAL*, under an editing board, and that a semi-annual or yearly retrospect be issued which shall include those first and second best supported presentments of facts, methods, suggestions, and appliances as have appeared during the preceding period, under some such heading as "endorsed selections." In which retrospect might be a department for contributions especially written for it, presum-

¹ *Dental Review*, January, 1890, "Looking Forward."

ably of superior merit. All of which, receiving the specific endorsement of such an organ, could be reasonably expected to be of greatly extended benefit, and in which journal it would be a real honor to appear.

Would not such a stimulus advance the quality of our published matter materially?

A few of the Points a Congress might consider.—Does amalgam meet any proper professional object not better fulfilled by oxy-phosphate cement provided with porcelain or metal-wearing surfaces?

Is pulp capping commendable?

Is there any adequate reason for the use of rubber, celluloid, or other non-conducting materials for base plates, or for permanent use in more or less extended contact with mucous membrane?

Have we no method for constructing a denture competent to displace non-conducting materials?

Is pyorrhœa alveolaris curable?

Is this disease of constitutional origin in whole or part?

Is the etiology of dental caries possible of definite solution.

Is delay of operation ever indicated in clearly diagnosticated caries or necrosis of bone?

This is intended to call attention to some of the matter that might be considered at the International Dental Congress suggested for 1893, by arranging a plan having definite announced intentions.

It is hoped the discussion will deal with this matter fully, in order that organized thought may be directed to an adequate comprehensive plan for the operations of the Congress, from which alone properly useful results can follow. We cannot afford to waste time in politics; we need to work and with a definite purpose.

Some Suggestions for the Action and Endorsement or Condemnation of this Society, being mainly a Synopsis of this Paper.—1. Does private pupilage tend to develop better and more capable operators?

2. Pupilage permits selection of material, which indicates that certain qualities must be inborn to make a truly professional man possible.

3. May not clinical instruction be extended and perfected, to the student's and school's profit?

4. Chemistry does not receive the attention in college courses to which it seems justly entitled.

5. Diagnosis seems to require more attention, if the college course may be measured by the lack of this ability apparent on investigation.

6. May not a better knowledge of surgery be possible to impart to the student?

7. Charges for infirmary operations have a pernicious influence on the mind of the student, if responsible for no other evil. It seems proper every effort should be made to elevate the moral status of the student.

8. Proper discrimination does not seem to be a common result of dental education.

9. Prevention is the first service of the dentist.

10. Repair brings out his executive ability, and illustrates the breadth of his training.

11. The principles of medicinal action rather than empiric use of remedies seems worthy of more attention.

12. Surgery embraces not only removal of diseased tissue, but also its reproduction as well as substitution to supply its loss.

13. Intercommunication in societies brings out the facts useful to the presenter of subjects equally with the listener.

14. Discussion does not mean dissension.

15. Does this society approve of a resolution requiring each essayist to present his paper practically completed to the Executive Committee at least a week previous to the time set for reading it, from which three or more copies shall be made and handed to members competent and willing to prepare adequate discussion upon them?

16. Will not a biennial congress, not necessarily international, conducted on an organized comprehensive plan, work our advancement?

17. Editing of scientific subjects should be at the hands of several persons practically engaged in the special branch.

18. Is it impracticable to publish within three months or less the full text of all society proceedings accepted, to be regularly contributed?

19. Is a national examining board for all colleges impracticable?

20. Is not the establishing of one or more purely dental surgery hospital wards essential and worthy of immediate consummation?

21. Cannot a dental club be organized, equipped with sufficient rooms and apparatus and library, for clinical, experimental, and literary work, social intercourse, and the entertainment of guests?

22. May not meetings be devoted to papers and discussions, by referring all business and transient matters to a permanent business committee?

23. Outside of this committee, do not a permanent chairman and secretary fulfil all useful need for officers?

Many of these observations and suggestions have been elaborated in various ways in other quarters, under the same patronymic as the authorship of this paper,—to wit, *INTERNATIONAL DENTAL JOURNAL*, August, 1889; *Dental Cosmos*, November, 1889; *Ohio Journal*, February, 1890; *Dental Review*, March, 1890; *Transactions of the American Dental Association*, 1889, and in a paper before the Brooklyn Dental Society in February last but not yet published.

It is hoped that the present occasion may be productive of some definite results. Of extended influence they will be if discussed to an issue and that issue published.

VARIOUS MODES ADOPTED IN FILLING TEETH.¹

BY WILHELM SACHS, D.D.S., BRESLAU, GERMANY.

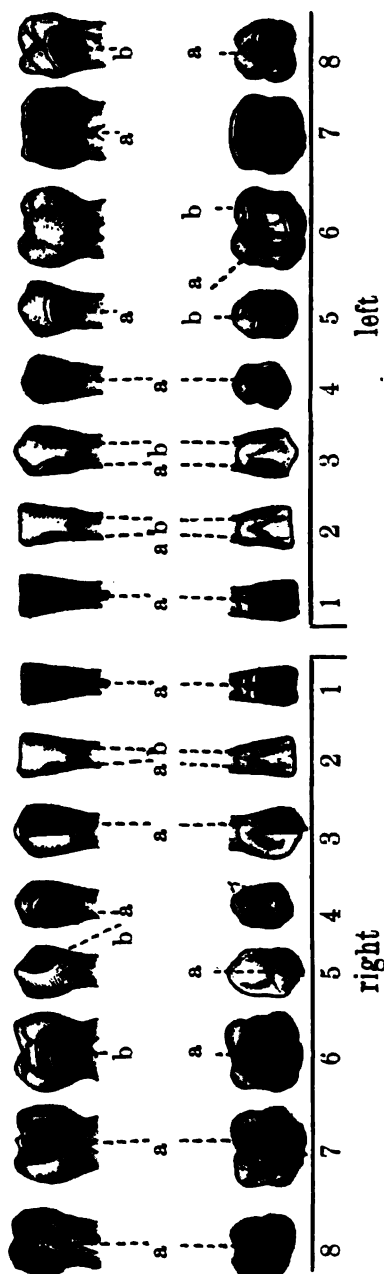
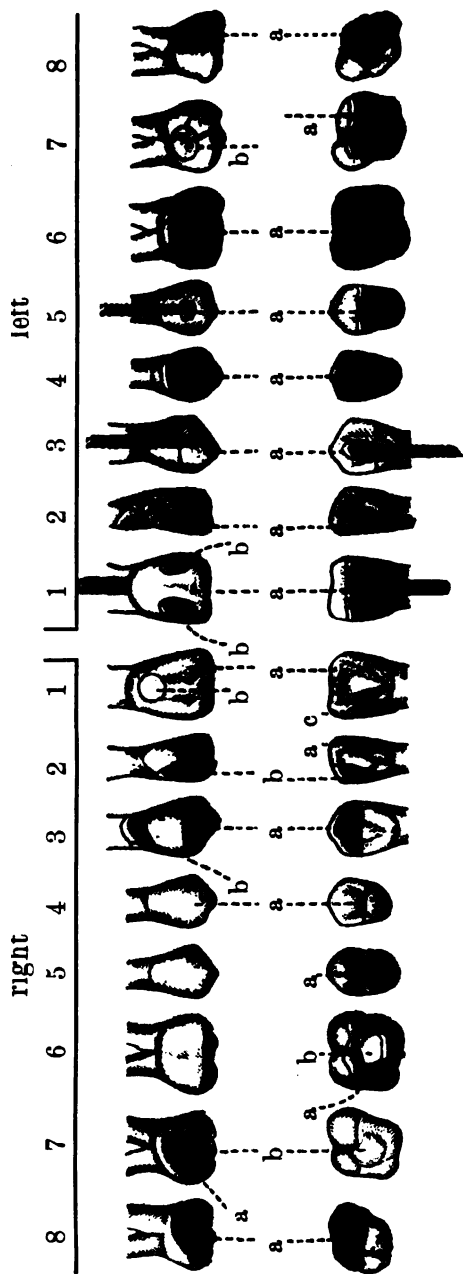
I HAVE the honor to show you here a skull with a full set of natural teeth, which I have prepared and filled with the different materials used in dental practice. The various forms of the cavities and fillings are such as we generally meet with. If you follow my explanations, as illustrated in these engravings, I hope you will understand my description of the work more clearly. We commence with (1) the upper right central incisor. This contains on the mesial surface a large platinum-gold contour filling. This material is probably not known to all the gentlemen present, therefore I would mention that it is composed of a layer of thin platinum foil covered with gold, having the appearance of the common gold foil. When it is put into the tooth cavity, trimmed, and polished, it has the shade of nearly pure platinum with a very slight gold color. Many dentists believe that it is less objectionable in regard to the appearance than a pure gold filling, and is claimed to be harder and more resistant than the latter. Concerning the working of platinum-gold, I would state that it is annealed like cohesive gold foil, to which it also adheres. It can be worked with hand-pressure and mallet. While annealing, care must be taken not to burn the gold, leaving the platinum foil uncovered. In the same tooth you see on the labial surface a porcelain inlay, which is, in regard to appearance, the most tooth-like material we can use. This inlay is made as follows: With a wheel-shaped bur, after

¹ Read at the meeting of the American Dental Society of Europe, August 6, 1889.

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Lower jaw.

the excavation, the cavity is formed perfectly round and as deep as possible, taking care not to expose the pulp. The walls must be at a right angle to the bottom, with a slight undercut. Then an artificial tooth of the proper color is ground nearly to the size of the cavity, leaving it a little larger. Only American teeth are fit for this purpose; English teeth show, after the grinding and fastening, a different shade of a gray, greenish character. The White Manufacturing Company have now for this purpose small round porcelain pieces of different sizes and shades. These have the great advantage that the material is dense and permits, after grinding, a perfect polish of the exposed surface. The piece of porcelain is fastened, by shellac, on the point of an old worn-out engine-bur, and this is put in the hand-piece of the engine while the engine is turned to the right; the porcelain is held against a fine corundum wheel of the laboratory lathe, which is turned to the left. The inlay is ground slightly conical, to fit exactly the entrance of the tooth cavity. If it happens to be a little too small, grind off the portion from the pointed end, and it will exactly touch the walls of the cavity at all points. If the size of the inlay permits of it, a shallow groove may be cut, with a sharp Arthur disk, into the side of the inlay, where the cement, which is used for the fastening, can enter. After trying whether the piece will fit the cavity, you can fill this with fine pumice, and grind with the engine the inlay into the cavity; in this manner you get the most perfect fit imaginable. Then the porcelain is taken off from the pin, cleaned with alcohol, and set with soft mixed cement, which must get entirely hard before you grind and polish the exposed surface with corundum and a Kansas stone.

It is recommended to fasten with Hill's stopping, but I have found this to cause a dark and unsightly rim. If such inlays are made correctly it requires a close attention to detect them. Such work will always give great satisfaction to patient and operator. In regard to durability, it will last, if properly done, many years. There are yet several methods for making porcelain inlays, but I fear it would take up too much of your time. I mention these, as I have yet several things to speak of that will be, perhaps, of some interest to you.

Fillings, such as *c* in the upper right central and *a* in the upper right lateral incisor, we often have to make. I call it a professional crime to open such cavities from the labial surface, if we can prevent it. It is not only our duty to preserve teeth, but also to preserve the good appearance of them, as far as it may be in our

power. To work at such places from the palatine surface a high skill in the use of the mouth-mirror is required. The mirror should be of a large size, round form, and only very little magnifying. A glass of higher magnifying power will distort the object reflected. Filling *c* in the central tooth is a contour gold filling, held by undercuts, retaining-points, and holes; this I do not recommend. The canine has two gold fillings, *a*, which restore the lost cutting edge; *c* is a filling in a cervical cavity. To keep this free from moisture while filling, the use of the new How's cervical clamp is recommended. Lately, Dr. George Elliott, of London, has constructed a clamp for the same purpose. Not having tried it, I am not prepared to give an opinion of its value; but, to judge by the drawing, it must work satisfactorily.

(4) The labial and a part of the masticating surface consist of a porcelain crown. We often find this portion of a bicuspid broken off. If we fill the defect with gold, it will be objectionable for some patients, on account of the appearance. Cement does not allow a contour of durability, but a porcelain piece will do good service in such a place. A common, plain, half bicuspid crown is ground to fit the cavity. The pulp-chamber is enlarged for the reception of the platinum pins. The piece is set in with cement.

(5) The palatine and a part of the masticating surface of the second bicuspid is built up with gold foil.

(6) The masticating surface of the first molar holds a gold filling with a piece of porcelain ground in. The porcelain piece is practically in such place worthless; but it has a good appearance and will satisfy our patients. After the cavity is cleaned and shaped, an artificial molar is ground into it a little smaller than the cavity, and fastened with quick hardening cement. The small rim of cement between tooth and porcelain is cut out with excavators and filled with gold.

(7) The root of the second molar holds an artificial crown consisting of a gold band and a porcelain masticating surface. After grinding and shaping the root, fit a twenty-two-carat gold band exactly to the contour of the root. After soldering, push the band a little below the margin of the gum and take an impression. The gold ring, which will remain on the tooth, is taken off and placed into the impression. Take an impression of antagonizing teeth. Make the model, place them in the articulator, and grind a porcelain masticating surface, which is manufactured for this purpose, to fit the band and the articulation. The band and porcelain is fastened with cement.

(8) The wisdom tooth has a filling consisting of a mixture of amalgam and oxyphosphate of zinc cement. This material has the advantage of cement and of amalgam without their objections. In cases where deep undercuts, required for amalgam, cannot be made, and cement, on account of its very limited durability, cannot be recommended, these two materials will do good service. First prepare the amalgam in the usual manner, then mix it with the fluid and the phosphate cement powder, and introduce into the dry cavity before it gets hard. It will not take such a high polish as a pure amalgam filling, but it will last nearly as long and does not discolor the tooth.

I come now to the explanation of the left upper jaw. The central incisor of this side is a pivot tooth. The method is perhaps more difficult and complicated, and requires more skill than some others; but I claim for it that it is better, cleaner, and stronger than any kind of pivot-teeth I know. In the root is a tube with six or eight longitudinal grooves. The tube is fastened with cement, and the exposed surface of the root is covered with gold. The pivot of the artificial crown corresponds exactly with the tube and prevents the turning of the tooth in the root. I have described this pivot tooth in the *Oesterreich Vierteljahrschrift für Zahnheilkunde*, and it is reprinted in the last Poulson's *Vierteljahrschrift*. Here is a preparation which will easily demonstrate the manner in which it is done. The porcelain front of the tooth contains two gold fillings. The cavities for these are ground in with diamond points. The method often recommended, to drill holes in artificial teeth with emery, turpentine, and spirit of camphor, by means of a copper drill, has been successful in my hands.

(2) The lateral incisor has a large platinum-gold filling. The cavity did not permit undercut or retaining-points, therefore I inserted two anchor screws for retaining the filling.

(3) The half of the canine is a porcelain piece. A gold pin is screwed into the root and a piece of an old-fashioned tube tooth placed over the projecting pin. The piece is fastened with cement and the end of the canal closed with a small gold filling. It is not often that we meet with such defects, but if we find a chance to perform this operation it will give us and the patient great satisfaction.

(4) The first bicuspid is almost entirely built up with cohesive gold. It was worked with the mechanical mallet and the Kirby pneumatic mallet, both driven by the electric motor.

(5) The root of the second bicuspid is attached to a Richmond crown with a buccal porcelain face. A gold band was exactly fitted

to the contour of the root, then the buccal wall cut out, into which the porcelain canine is placed and soldered.

For greater security a headed gold pin is screwed into the root. The crown is fastened with Brinkmann's cement.

(6) The crown of the first molar is also an artificial substitute. It consists of a platinum band filled with amalgam. It does not look as good as a gold crown, but it is quickly made, is less expensive, and gives the same service.

(7) The masticating surface of the second molar is filled with gold extending over the distal surface up to the cervix. The approximal surface is filled with copper amalgam, a method which I very often make use of, believing that no other filling material (except gutta-percha) will prevent secondary decay so effectually. I first fill the prepared cavity entirely with copper amalgam, using the matrix. I then allow the amalgam to harden at least two days, having found that such a long time is necessary for the mercury to amalgamate perfectly with the metal. Upon this, after a portion of the amalgam on the masticating surface is removed and undercuts made, I fill with gold and finish. This combination, making the apparently difficult operation very easy, saves time and has for the conservation of the tooth at least the same effect as a pure gold filling. The buccal cavity is filled with Hill's stopping, which, in this peculiar place, is of great value.

(8) The distal wall of the wisdom tooth, including a part of the masticating surface, is filled with copper amalgam, which in such cases is the most reliable filling.

In the lower jaw you notice the crown of the right central incisor about two-thirds built up with gold foil. This extensive contour filling is held by means of an anchor screw fastened into the root-canal.

(2) The lateral incisor has two cavities, often met with in daily practice. I said before that I think it to be a professional crime to open approximal cavities from the labial surface.

That remark refers only to the upper front teeth. If we would undertake to excavate and fill the approximal cavities of lower front teeth from the lingual surface, we would transform from a relatively simple operation into a very complicated and difficult one. If time permits, in such cases, I place between the teeth common cotton for two or three days to separate them, not using sandarach varnish, which prevents the swelling of the cotton.

(3) The cutting edge of the incisor is built up with gold, an operation not very difficult, but requires much time and patience.

(4) Two small gold fillings are inserted into the masticating surface of the first bicuspid. In this case the wall between both was sufficiently strong not to require cutting away. In other cases it would be better to combine the cavities.

The buccal surface has a platinum-gold filling.

(5) The root of the second bicuspid serves as a holder of a Logan crown, which is set with cement. To get a very secure hold of the crown two or three little cross grooves can be cut into the walls of the root-canal. Also barbed hooks can be cut with a sharp knife into the edges of the square pin, the points of the barbs towards the porcelain crown.

(6) The first molar has on the masticating surface a large tin-gold filling with gold centre.

(7) The combined masticating and buccal surface of the second molar is filled with gold, but showing a free tin-gold rim covering the walls of the cavity. In regard to this material, I think it has not its equal in the proper place. It can be worked nearly as fast as amalgam, will last as well, often better, than pure gold, and will prevent secondary decay, and is as reliable as gutta-percha or copper amalgam, not staining the tooth. To those who are not familiar with this material I would advise the reading of Professor Miller's essay on this subject.

(8) The wisdom-tooth crown is built up with amalgam which is held by means of two platinum pins, headed and screwed into the root-canals. In this case a ring matrix was employed, which was left in place for twenty-four hours, until the amalgam had hardened.

(5) The buccal surface of the second bicuspid is filled with tin-gold, the masticating surface with gold, continuing on to the approximal surface down to the neck of the tooth.

(6) The first molar has upon its masticating surface a piece of porcelain, ground in, fastened with cement and surrounded by a gold rim.

(8) The root of the second molar holds a Richmond crown. There are several methods of making this; but I have only found two modes which have proved satisfactory. After treating and filling the root-canals, if this should be necessary, grind the left portion of the crown so that the walls are parallel. Then shape and fit a gold band around the root and solder to this a masticating surface, into which the cusps are swedged with a stamp, which can easily be shaped according to the case. The other method is somewhat different. Take the impression of the stump upon which you

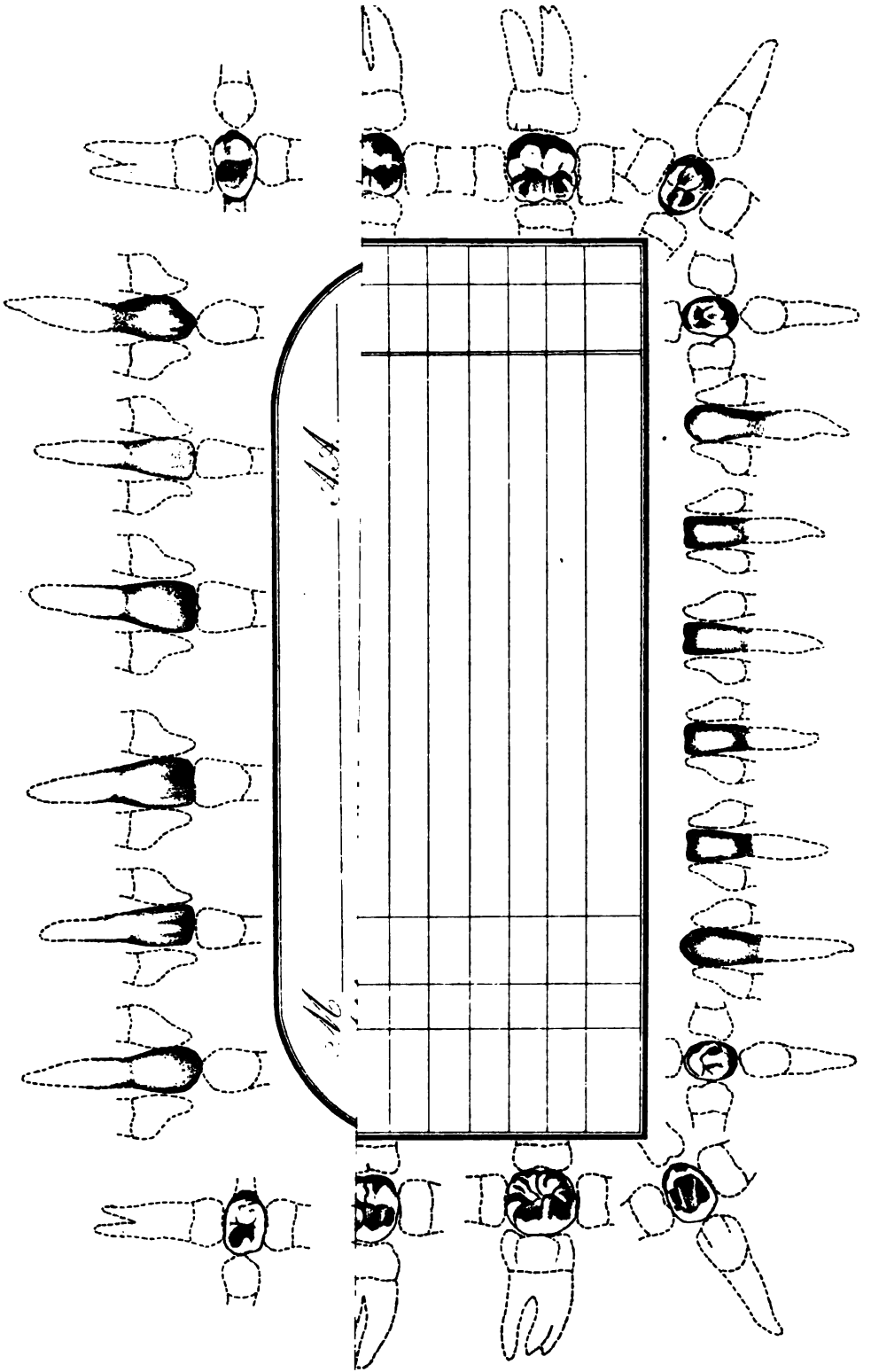
intend to make the crown. Cut out a piece of gold plate resembling in shape the German iron cross. Stamp with a punch the masticating contour and bend the side parts down to fit the root. Tie a thin wire around it, and place over the root in the mouth, and twist the ends of the wire firmly together until the gold plate has taken the exact shape of the contour of the root. Remove the crown, give one turn to the wire to get a slight fitting of the crown, and solder. Drill a hole into the masticating surface through which the surplus cement, with which the crown is fastened to the root, can escape.

(8) Filling *a* in the wisdom tooth is a cross-shaped tin-gold filling; *b*, a red gutta-percha filling. This material is not sufficiently estimated. It has the same conservative properties as Hill's stopping, but does not wear off so quickly. It should be carefully heated and pressed into the cavity with cold instruments. Overhanging portions should not be removed with warm instruments, as these would draw the gutta-percha away from the walls. After cooling off, cut the surplus away with a thin, sharp knife. English red gutta-percha is not fit for such fillings; only the red base-plate gutta-percha should be made use of.

IMPROVED DENTAL LEDGER AND BOOK-KEEPING.

BY DR. L. C. BRYAN, BASEL, SWITZERLAND.

COPIES of the dental ledger have already been passed round. I have a system of keeping books, and I find that every other man has also, and he wants to adhere to his own system, but if there is anything in this sheet which interests you, or if you find any good points, they can be readily copied by any lithographer. There is certainly one advantage, and that consists in having the four sides of the teeth representing the size of the filling if you leave an old one in, and have afterwards trouble with the original filling; it can be successfully designated on your diagram, and you can show your patients how the matter stands on the four sides. In these lithographed stones, which I have had made, each one has had defects more numerous than the first, and I have spent several hours in drawing and improving; still the result is not satisfactory. If I fill a central incisor on the surface, I mark it



No. 1, note the operation performed, the material used, and whatever notes I may wish to make. Any number or half a dozen fillings can be recorded in one line. I have an entire method, but I need not call your attention particularly to it. I have the spaces for recording all operations, and figuring up the account. I do not require any credit column where I have a separate cash account. There is no necessity for an elaborate profit and loss account of book-keeping, because my patients in Basel all pay up well.

One soon develops his own system of abbreviation and signs when he wishes to economize time and space. The operations year after year are numbered in order, so that, by following down the columns marked next to the date, we find the various numbers corresponding to those opposite to any tooth or teeth of which we wish to investigate the history. The advantages of a clear chart with self-defined and ample space for pencilling marginal notes in regard to the condition of the tooth, and presenting as soon as the book is opened to the ledger page desired, is an inestimable boon to the busy operator. I have simply Chandler's appointment book and this ledger. At night I take my list of patients from my appointment book and write up each account, the whole notation requiring fifteen to thirty minutes. In that time I have drawn a line over the surfaces filled on each tooth, put a number there, and the same number in the number column, stating material used and the price. By any system of abbreviation two or three operations can be recorded on each line, and valuable notes as to methods and materials be made, besides the marginal notes. In this way fifty operations can be noted on one page,—enough for several years. I have loose pages to paste in when one is full, or when other members of the family come, and I wish to keep them together. One can put two or three accounts on one page when there is a good class of teeth, which need new operations.

When I fill a root I show on diagram just how far down each root is filled, so that, in case of after-trouble, I know where it has originated.

If the roots are recorded as properly treated and filled, I know my treatment must be external. If I repair an old filling, the repair can be clearly shown with ample diagram spaces, and in case of failure the patient can perceive just how far I am responsible. With a record of all operations performed the interest is stimulated in observing and comparing methods and materials, and the pleasure in practice is enhanced. The diagram simplifies any system, and keeps all operations clearly exposed for reference. These notes I

often make while waiting for the servant to arrange the operating-room between patients. I note the date of the sending of the bill, and when paid, on one line below the account, and so have all my records here, not even needing a cash-book. In my appointment book, opposite the name, I note the amount of the daily operation for each patient, in characters, as a merchant marks his goods with a cost mark; and so can readily figure up my income when desired.

I have been several years arranging this diagram, and in October, 1888, wrote to a friend in Boston, telling him of my plan, and asking if any such system existed in America. He did not answer until May, 1889, when he enclosed a sheet of a similar ledger page, which he had in the mean time arranged and had copyrighted this year (1889).

THE USE OF A MATRIX IN CONTOURING FILLINGS.¹

BY DR. H. A. BAKER.

"AFTER using all methods of separating by filing to get space between teeth for filling, I became fully convinced that the principle was entirely wrong, consequently gave the subject considerable thought." I was looking about for some other method to pursue when, in conversation with a professor in one of our dental colleges, I made to him the above statement. He replied, "If you come to my office some time, I think I can tell you of a method by which you will be able to save teeth." Upon availing myself of his invitation, I found his method was to bulge the fillings so that the tooth-substance would not come in contact, and was accomplished without previous separation.

After giving the subject further study, I came to the decision that it was an improvement at least, and went to work to put it to a practical test. Now, gentlemen, perhaps you can imagine my surprise when I found it a great deal easier to insert a contour filling in my mind than it was to put it in the distal surface of a twelfth-year molar. I persevered with the method, and the more I used it the more firmly was I convinced that the theory was correct.

About this time I began separating the teeth before filling,

¹ Read before the American Academy of Dental Science, Boston, Mass. April 2, 1890.

and with better results. While I was trying to simplify the work, it finally occurred to me, one day, that I had formerly used pieces of old files for a matrix in putting in a flat filling, which idea was, I believe, first introduced by Dr. Louis Jack. By drawing the temper and bending the file I had something approximating the contour of a natural tooth. Being more than pleased with the result, I felt that my future success, with careful work, was assured and much labor saved.

One day upon going to my case I accidentally took up a piece of thin copper. After bending this to the desired contour I inserted my wedge as I had formerly done when using pieces of file. The copper yielded to the pressure of the wedge, and if I had continued it, there would have resulted a flat filling. I removed the wedge and tied a ligature about the tooth and copper, by winding around the tooth from the cervical wall to the crown just as a thread would be wound around a spool. I then proceeded with my filling. After the filling was completed the copper was removed, and, to my surprise, I found that I had a gold filling of nearly the exact shape of the natural crown; the edges extended just a little beyond the periphery of the cavity and the surface appeared to be almost entirely polished. After burnishing, I found that I had very little finishing to do, and had a beautiful contour filling. As far as I know, this is the first time the ligated copper matrix was ever used for this purpose. Since that time the plain copper has been replaced by the silver-plated, which reflects light well and so illuminates the cavity. I now became very much encouraged, and grew very bold in making the cavities broader, with the idea of keeping the tooth-substance a greater distance apart. By this time I became fully convinced that I was in possession of the most satisfactory method of saving teeth by filling, and I have ever since been a strong advocate of contour filling. Moreover, I have brought the method before several dental societies, and I believe that the last paper that I read before this society was upon that subject. I was criticised after making the bold statement that I had never seen decay around a well-contoured gold filling in a proximal cavity.

I stand here to-night ready to repeat the same statement with one exception, and that relates to a patient's mouth where I have proved that gold is not a good filling, and that her teeth are of a very poor quality, and would be quite as liable to decay around a crown filling as about a proximal one. For some time past I have used nothing else but cement or copper amalgam for her teeth. I am also accused of making another bold statement,—that I have

never seen Weston's cement dissolve at the cervical wall,—and I am also ready to renew this statement. While at that time I gave the credit to the cement, I will make the assertion that I have never seen any of the well-known cements decay at the cervical wall. I believe it is not the kind of cement but the method by which it is inserted. I wish it to be understood that the point in question refers to a proximal cavity.

You may smile when I give the whole credit to the matrix. My point is, that the matrix should be fitted closely around the tooth, and the filling inserted and forced in, producing a filling of uniform density. By using force it can be crowded in and overlap the periphery all around. The result is that the filling is as hard at the cervical wall as in any other part.

There are several kinds of matrices in use. It is difficult to decide between them; but this may be said, that the man who gave to the profession the steel matrix, encircling the whole or a part of the tooth and firmly held in position by some device, has given us one of the greatest boons that the profession is in possession of, and I do not hesitate to add—and I am ready to have it go upon the record—that any practitioner who does not avail himself of some of its forms now in use, and by its aid insert contour fillings in bicuspids and molars, reducing the operation to a simple filling, is far behind the times as an operator and does injustice to his patients by not giving them the most comfortable, serviceable, and conscientious work. The advantages of the matrix are too well known by the best and most careful operators to be discarded.

Reports of Society Meetings.

AMERICAN DENTAL ASSOCIATION.—THIRTIETH ANNUAL MEETING, EXCELSIOR SPRINGS, MO., AUGUST 4 TO 8, 1890.

(Continued from page 588.)

Tuesday Evening's Session.

At the Tuesday evening session of the American Dental Association President Foster appointed L. D. Shepard, Boston, Mass.; W. W. Walker, New York; O. S. Hunt, Iowa City, Iowa; H. P. Noble, Washington, D. C.; and George W. McElhany, of Columbus, Georgia, a committee of conference upon the World's Fair matter. The Committee of Conference from the Southern Dental Association consisted of L. D. Carpenter, Atlanta, Ga.; J. Y. Crawford, Nashville, Tenn.; W. J. Barton, of Dallas, Texas; J. Taft, of Cincinnati, O.; and C. S. Stockton, of Newark, N. J.

The report of treasurer A. H. Fuller, of St. Louis, showed a balance on hand last year of \$2028.53. The total receipts for the year amounted to \$1080, and the total expenditures to \$1739.81, leaving a balance on hand at the present time of \$1368.74.

Section 5 was first called, but owing to the absence of the chairman, Dr. A. W. Harlan, it was passed. All of the other sections were then passed until Section 2 was reached. Dr. C. N. Peirce, chairman, presented the paper of Dr. W. H. Atkinson, of New York, for reading and discussion. The title of the paper was "Education, Nomenclature, and Terminology." After stating that anything like an exhaustive demonstrative presentment of the subject in the brief period allotted to essayists was impossible, Dr. Atkinson said,—

The term education signifies to draw out of the storehouse of the mind demonstrations capable of being formulated and held in consciousness ready for use in the efforts to communicate in a satisfactory manner the mental processes through which they have been acquired. This involves a comprehension of the work in progress to the completion of the stages of mental growth through which we are carried to attain a full understanding of the processes pertaining to the healing of mind and body.

The naming of these stages would properly be the work of nomenclature or the classification of things.

The technique of recording various movements involves the proper arrangements of terms which are the elements in terminology upon which correct classification depends.

The greatest obstacle in the way of the teacher is the assumption of finality, requiring the learner to refer and defer to the recorded statements in the earlier states of the records. By this saying I do not mean to ignore the potency of memorized trends of thought, but I do mean to advocate the necessity of keeping in touch with the present illumination of learners and teachers throughout the whole range of valuable and minute research.

The particular instance that comes to my mind now as specially obstructive to our progress is the attributing of the power which operates the function to the body at which the changes occur. For instance, it is said of the liver that it secretes bile, which is not true. Bile is secreted in the liver by a process not yet demonstratively formulated. Probably the greatest mistake is made in saying, Give me the measure of phosphorus on a planet and I will give you the amount of mental activity possible to that planet; which is often formulated in a modification of this statement by saying, The brain secretes thought, and where no brain is there is lack of mental action, and such like statements. All such naturalists fail to see that the power is before and in all of its manifestations, the justification of which has already been stated in this paper,—viz., the physiology of the mineral kingdom is crystallization, that of the vegetable kingdom is cellulation, that of the animal kingdom is corpusculation.

A friend asks, What is the significance of the skin? and probably had little conception of the reach of such a query. Take a piece of human skin and study it minutely, and it will be found to consist of an outer surface and an attached surface to the body of the organ of the body constituting the system.

The principal function of the skin and the mucous membrane is depurative,—that is to say, the throwing out of the excess of pabulum, effete matter, and *débris* resultant upon functional activity of the underlying organs. The mucous membrane normally absorbs nutrient material when reduced to the character of a perfect peptone, and under certain circumstances the skin may in a minor degree do the same when immersed in a solution where perfect peptones abound.

All this and more has to be stored in the mind to avail ourselves

of the best modes of education. The stored mental activities of ancestry is one measure of individual endowment. This hereditary endowment of past molecular experiences and effectual activities of ancestry lays the foundation, by involution, of the possibilities of evolution, of which so much is made in these days of scientific inquiry as to the origin and development of species and varieties. I have seen children for whose mothers I have performed the functions of an obstetrician which I recognized as belonging to the family by their manner of locomotion when I only saw their backs; and if in one man's experience of a short career there shall be a multiplicity of examples pointing to this doctrine, it will not be deemed hallucination or dementia to state that the agreements and disagreements and the quarrels indulged in by the parents are visited upon their children, as the Scriptures say, to the third and fourth generation. Then let those teachers who love their calling and their pupils take courage and go forward.

Had we the record of all the past condensed into the single syllabus of one paragraph, we would be minus of the accomplishment of our desire to lead our progeny into a fuller appreciation and understanding of the problems of life.

In closing, Dr. Atkinson referred to the methods of work and the presentation of papers to the American Dental Association. If progress and improvement are the objects aimed at, he insisted that the members of the society should be wide awake to the opportunities presented. He urged a greater esteem for the life-work committed to the charge of all. He advised all to go forward and meet the future bravely and to attempt the getting at the bottom of things. He advised that all papers presented to the society should be fresh, thoughtful, and vigorous.

Dr. A. H. Thompson, of Topeka, Kan., read a paper on "Scientific Education in our Colleges." He said,—

That scientific education is in danger there is no doubt. The practical man insists that students should hurry on to money-making, the chief aim and end of the life of the modern. His gospel is purely commercial, his instincts are purely financial, and he believes that science is fit only for cranks or for the curious. The plea of this paper is for a scientific education pure and simple. The ground is taken that the student should love learning for its ennobling and elevating powers, and not because it brings increased facilities for making money. A Nemesis of money-making broods over the land like a death damp. This spirit has prostituted science until nothing is thought of except the acquisition of the

almighty dollar. In this there is nothing new. The money-makers are as old as the race. But it is the apparent triumph that alarms us. The practical man has always pleaded for more artisans, more industrial schools, an increased material education. But in spite of the practical man science is advancing and will continue to advance. The creed of money-making is in the very air that we breathe, and there is need for some antidote. But few men have escaped from the fever of wealth-gathering. Few men are wise in this respect, and but few have learned to rate wealth at its true value. The true student has learned how to get out the best there is in life. He is in touch with the ages, and is loyal to truth and to science.

We would not be ungrateful to the artisan. We glory in our material advancement. There are noble men who wear the garb of mechanics. Artistic operating is well and good in its way, but it is not necessary that applied science should always be placed upon such a lofty pedestal. The basis of action is knowledge. If we are to train our boys and girls only in the arts the apprenticeship system would be the better and the easier. Why should the practical man wish to degrade science? It has been his best friend and has kept alive the spirit of research in the world. The office system is the delight of the practical man. There he reduces things to a system subject to the one will of the master. After all, the foundations of science never change. Practice is science materialized, therefore science is a practical thing in itself. Yet with the materialization of science has come the materialization of civilization. By thought man seeks out secret forces and powers. By thought he defies disease and conquers nature and the natural. But the savage is pre-eminently practical.

In dentistry we are entering upon a new era. The three years' course in our colleges is about to be made general. The main cause of the lowering of the standard heretofore has been found in the fact that it was necessary to bring down the subjects to so low a platform that they could be mastered by the average dental student. Now we have more time for the work of preparation. Let us lay the foundations deep and broad during the first year. The second year the lectures should be largely didactic. The third year should be more comprehensive in its scope, but throughout the entire course we should keep in mind the principles of simplicity and precision. It would be a great mistake to put the fundamentals out of sight. What we want is a series of monographs so arranged that the students will be able to master the main points.

The great weakness of our teachers has been that they have not been trained in the art of teaching. For a busy practitioner to rush from his work to the school-room and deliver a lecture without preparation is to invite careless work on the part of the students. We need teachers born to the work, teachers who will take the time to study and to prepare their lectures.

The manual training movement, which is attracting so much attention in this country, should be confined to the primary courses. If the intention and the object is to make athletes and artisans of our boys, it will be better to have none of it.

Referring to the conflict between the State Boards and the dental colleges Dr. Thompson said,—

The State Boards must be made up of men who are skilful and well educated, both in theory and practice. If not prepared in the details of the various branches they should employ specialists. The colleges will follow where the boards lead. The boards are in authority, they are custodians, and with them rests in a large measure the standard of the future. We believe in the ultimate triumph of the right. We have confidence in the strong man. The weak man is the superficial man. A profession is scientific, a trade materialistic. Let us guard the sciences closely, well remembering that if we lose sight of knowledge we lose sight of all that is valuable.

A paper written by Dr. Charles B. Atkinson on "Education and the Obligations it involves" was next presented by Chairman C. N. Peirce. The writer commenced with a discussion of the duties and obligations of the educated. He held that the truly educated man will not spend too much of his time up in the clouds. This is not a danger that besets the practical mind. The cry of modern dentists is for greater and greater skill. The true training of the student should be a combination of the theoretical and the practical. If theory is indulged in to a great extent the very theories give rise to many difficulties. Each chair in the various schools thinks it necessary to propagate a new theory. Each school has its specialties, and those in authority place special stress upon certain teachings emanating from the various faculties. But a broader and better course would indicate a training more general. It is not necessary to find fault with our colleges all the time, but there should be a change in methods. It would be considerable trouble to rewrite lectures every year, but why should not the students have the advantages of the improvements going on in the dental world? Why is it that wholesale extraction is still practised to such a large extent among

the dentists of to-day? Who is to blame? When George Quackenbos Coulton told the story of three thousand teeth extracted, before a large and brilliant audience of dentists, only one voice was raised against the practice. Men who work by the hour are mechanics. They should go into the shops. There are too many dentists to-day who are conducting their offices upon the factory basis.

Then how about ethics? Have we a code of ethics as a profession? The man who owes a debt to one dentist never has any trouble in contracting debts with another dentist. We talk of our profession. There is such a thing as being a trader. The colleges claim that they do the best that is possible with the material presented. One plan would be to have the applicants to our colleges examined as to moral, mental, and mechanical fitness. There is little need in life at the present time for the men who can only extract, but cannot save teeth. Then, again, too many men go into literature and into the societies for advertising purposes. Some men seek preferment, and too often they find it. The few bear the brunt of the work, the others gather in the glory. After all, the United States has many names that should live forever. They have honored their country and their profession. Some are dead, some are still living. They will be remembered, but how small the satisfaction of saying, "I will be remembered when dead." The field of ethics is a broad one. True worth should be the criterion. In our societies wise counsels should prevail. The occupancy of an office should carry with it the dignity and responsibility of office. The names most illustrious in the history of the profession have been the names of men who have carried on the warfare with disease, not merely for a livelihood, but because of their love for the profession. The three years of six months each now required of our graduates should give us better men. A thorough education will tend to equalize the character of the graduates and pave the way for uniform laws. Then a code of ethics, based upon common sense and common honesty, will not be ignored.

A paper written by Dr. B. A. R. Ottolengui, of New York, was next presented. The subject of the paper was a "National Dental Education." The writer based his objections to the present system of dental colleges upon the following points:

1. Each school has a standard of its own.
2. The professors and teachers are interested commercially in the success of the schools.
3. Junior and senior classes are obliged to listen to the same lectures.

4. The classes are so large that only the persistent student learns.

The writer advocated a national dental degree, and insisted that this would serve as a basis of comparison to determine the merits of the different schools. He held that a national dental university could not be expected this century. For the present a national board of dentistry could be created with power to grant the degree of D.O.S., or Doctor of Oral Surgery. He would have this board meet alternately on the Atlantic coast, in the valley of the Mississippi, and on the Pacific slope. The theoretical examinations could easily be conducted by the board, the technical examinations could be conducted through clinics. An examination fee should be charged to go to the treasury of the board. This fee should be variable, and should discriminate in favor of the students coming from a distance. It would be necessary to keep before the public, through the secular papers, the fact that examinations of this nature are being conducted, as well as the fact that a higher degree is conferred upon worthy students in the fields of dentistry, in honor of their work. The writer held that the point so long aimed at would soon be reached, and the various colleges would boast not how many students have been graduated from the respective institutions, but of the number that have attained to this higher degree. In explanation of the good that a board of this nature would do, the writer cited the example of the State Examining Board of New York. Since 1870 two hundred and ten men have applied for certificates. Only one hundred and three have succeeded. Of the graduates from the dental schools, twenty-two out of twenty-five have passed, and consequently certificates from these colleges have been at a premium. The writer was emphatic in his demands for legal enactments, as well as for a strong moral force, to back up the laws of the States.

The question was asked by one of the members of the Association, if a paper very much like this had not been presented in the *Chicago Dental Review*. The title of the paper was given as "Looking Forward." The chairman explained that the writer of the paper had given credit for the passages taken from the paper referred to, and that in accordance with the rule of the Association requiring original matter the quotations had been omitted in the reading.

The convention then adjourned until Wednesday morning.

(To be continued.)

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting Tuesday evening, May 20, 1890, in the New York Academy of Medicine, No. 12 West Thirty-first Street. The President, Dr. J. Morgan Howe, in the chair.

INCIDENTS OF OFFICE PRACTICE AND CASUAL COMMUNICATIONS.

Dr. S. G. Perry.—There is no workman in the world who should have such delicacy of touch as the dentist, and in order to have that he must have soft fingers and not be in the habit of handling harsh instruments. I have had great pleasure in the use of wooden handles of different forms. I have had them made of various sizes and styles. I have some here made of Stubb's wire and put into the wood nearly the whole length of the handle. They have no ferules. The wire inside the handle gives great firmness and stiffness to the instrument. These handles are very small, for the reason that the points are very delicate. The size of the handle should always be proportionate to the size of the instrument itself. They have a feeling of softness and delicacy in the hand that cannot be had in the steel instrument. In fact they are simply steel instruments covered with wood. I am having some made that will be covered with vulcanized black rubber. Instrument-makers have a great fancy for making their instruments "pretty," and just in the proportion that they make them pretty by knurling and milling they make them unfit for use. I think the men who use tools should have them as smooth and soft in feeling as they can be made, and if the instrument can be partly filled out with wood it will give delicacy of touch and lightness also.

I wish to show here a very delicate mandrel for holding extremely small sand-paper disks. In order to change the disk quickly one must have some means of holding either the nut or the screw. Many years ago the S. S. White Company made for me a small mandrel with a screw-driver that engaged and held the screw. These could be quickly changed, but in time the square holes in the ends of the screws became worn, and as the disks were put on the screw instead of on the mandrel they would often drop off the end of the screw-driver.

In these I put the disks on the mandrels, and I have here a screw-driver that slips over and holds the nut with unerring cer-

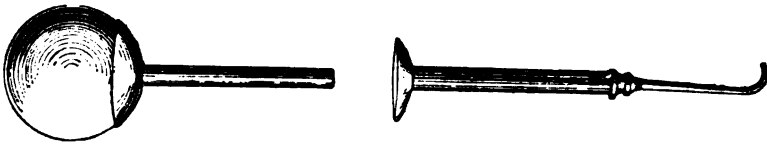
tainty. The screw-driver being magnetized, the nut is held firmly in place. The mandrel is made complete from a piece of No. 42 gauge wire. It can be cut by the bur-cutting machinery to be as delicate as the burs of the smallest size. Disks about a quarter of an inch in diameter, mounted on these slender mandrels, are very useful in finishing proximate fillings, as well as all of those near the gum on the labial and buccal surfaces.

Dr. Jarvie.—I wish every gentleman here could see the device I saw in Albany, last week, for holding sand-paper disks. It enables one to adjust and fix firmly a disk in a moment. It is not yet on the market. The inventor has made but two, one of which he had sent to Washington. By the device I speak of the disk may be put in the palm of the hand, the mandrel revolving in the hand-piece, touch the hole in the centre with it, and in an instant—like magic—the disk is in place. There is something like a cork-screw on the end of the mandrel; not a wire cork-screw, but one cut out of a piece of steel, having perhaps two turns, ending at a shoulder; there is a little lug that the disk slips over and which prevents it from returning if the mandrel is reversed. It is the simplest thing in the world.

Dr. Meriam.—I do not know how many of the gentlemen present remember the exhibit at the International Medical Congress. I studied it pretty well, and thought we would some time have an exhibit in Massachusetts, made up on that model. Two years ago I was able to aid in arranging one. We tried to make the exhibit not only one of appliances, but of appliances exhibited by actual producers, and materials that could be traced to a source; among the exhibitors was the Davidson Rubber Company, of Boston,—the first rubber company that ever exhibited at a dental meeting,—exhibiting its rubber dam; and since then we have arranged with a maker of surgical instruments, Goldthwaite & Company, Washington Street, Boston, to keep this rubber for us. I believe this to be almost the only rubber sold in the name of the manufacturer, and by the pound. I have brought some samples with me. The wholesale cost is, I am informed, the highest of any rubber dam made.

Dr. Kingsley.—I wonder if I am the only one in the society who has ever been bothered with syringes. I think that the best syringe for washing out a cavity which is being prepared, is a syringe with a rubber bulb,—and I have found that if the outlet is as small as I would like to have it, so as not to deluge the mouth with a sudden flow, too much time is consumed in filling the bulb.

I am not a very patient man while waiting for a bulb to fill, and seconds seem minutes sometimes. What I would really like would be a syringe with a very small outlet, which would give force without discharging such a quantity of water, particularly when I have the rubber dam on a tooth. I am not satisfied with blowing the chips out, I want to wash out the cavity, but I don't want to deluge the cavity and the rubber dam. It takes but a very little water, if there be force enough. To overcome the difficulty I conceived a double-tube syringe. The tube, which is attached to the



bulb, slides into the tube which carries the point, and fits so accurately that there is no leakage, or if there should prove to be any, a small washer of sheet rubber corrects it. The point of this is very fine and will give a jet of great force. I found, by experiment, that to fill the bulb by sucking it through the point required over one minute, while detached it would fill quick as a flash.

I have looked around and have not found anything like it in the market. The nearest thing to it that I saw was one which would unscrew. The bulb is filled and screwed up again, and in the mean time more time has been lost than by the old-fashioned way. If this of mine is found to be as convenient to others as it is to me it will be very valuable.

Dr. C. A. Woodward.—It will be remembered that two or three months ago, in one of our meetings, Dr. Jarvie presented a model of some superior teeth, and stated that he believed that one of the central incisors had been considerably shortened. Some who were present were of the opinion that, instead of that one shortening, the others had elongated. I have here a model of a case in which I believe the tooth has shortened nearly the sixteenth of an inch, and the others have not elongated. The teeth are in a normal, healthy condition, and the shortening has been going on for some four or five years.

One thing more. Some two years ago I had made a set of burs for trimming the roots of teeth. I have had a great deal of trouble in trimming teeth without lacerating the gums. Most of the burs in the market are coarse and cut too rapidly, and the shapes did not suit me. I have a set of burs here of an oval shape, or rather

more like a saucer. They are not coarse, neither are they very fine. I find that I can trim roots with them more rapidly than with any other burs that I have used, and without injuring the gums.

Dr. S. F. Howland.—At a recent meeting Dr. Howe exhibited a clamp for retaining the rubber dam while filling labial cervical cavities. Dr. Howe kindly loaned me one of them, and I have used it with a great deal of satisfaction. My first trial was on a lower cuspid having a very large cavity, and there was an abundant flow of saliva in the mouth. I applied the clamp which held the dam, so that the cavity was kept absolutely dry, and I was able to fill it without difficulty; whereas, without the clamp it would have been almost impossible to have kept the cavity dry.

Dr. Perry.—I have used that clamp in the same manner, and for the same purpose, with a great deal of satisfaction, but I found there was difficulty sometimes in adjusting the holder, and I have a number of times tied that little outer disk to the tooth itself, instead of using the clamp, and it worked admirably. I would like to ask the president if he has used it in that manner.

President Howe.—Yes, tying with thread or silk is a very good way of holding the dam-retainer in place on a tooth. The clamp is not an essential part of the device, it is only one means of holding the retainer in place.

Dr. Perry.—I have had such good results in tying that it seemed to me hardly possible to improve upon that method. I can hardly think of a case that I could not control completely by tying that little device to the tooth. I think it is a most valuable acquisition.

Dr. Meriam.—I wish to say a word about that clamp. I filled the other day a distal cavity, extending above the gum, in a cuspid tooth, the first bicuspid having been lost; always a very annoying cavity. I had a chance to use the plate, and tied it on, doing away with the holder, and had very excellent results indeed. One especial advantage is, that the face-plate lies so close down to the tooth that the cavity can be filled without the necessity of reaching through any great distance.

Dr. S. H. McNaughton.—A few days ago I received a note from your president asking about a preparation I use for devitalizing pulps, and adding that he should like to have me present the formula of it to this society. The formula is—

Thymol, 24 grains ;
Camphor, 12 grains ;
Arsenious acid, 8 grains.

It acts much as other "nerve pastes" do, except that it hardens and toughens the pulps and makes its removal easier. And there is no decomposition or disintegration of the pulp, even if it should remain in the tooth for three or four weeks.

The devitalizing of the pulp is usually accomplished in from two to four days. If one or two applications do not destroy the pulp, then I add a little salicylic acid, which tends to soften and dissolve it; but, by using the salicylic acid, one of the very best qualities of this preparation—that of preserving the pulp from disintegration—is lost. If, after the application of the arsenic, there is severe toothache, I apply to the pulp (without washing or syringing out, and being careful to avoid pressure) another preparation, the formula of which is—

Camphor, 60 grains;
Tannic acid, 80 grains;
Alcohol, 1 ounce.

This will nearly always prove effectual, but may require a half-hour, and the action of the arsenious acid appears to be continued under it. The camphor coagulates and makes a firm plug.

Dr. Bogue.—I have been transplanting three or four teeth lately, and one case was to me something unusual. One of my professional friends had sent a patient to Dr. Hasbrouck to have the roots of a bicuspid taken out; and the successful extraction of those roots necessitated the removal of quite a depth of alveolus. Four days later this gentleman was at my office with his sister, and asked if anything could be put in there. I said yes, I can put a tooth in, but it will fall out again, probably; but said he, "Suppose it does; let us try." There was a tooth which had been lying in my drawer nearly six years, and it was put in and tied with silk, and it has never given a moment's trouble. That was done three weeks ago. The absence of periosteum and the absence of alveolus was to me something unusual; altogether so. The use of a tooth that had been lying in my drawer that length of time, and supported only by soft tissue, was purely experimental. We could hardly hope for good results.

Dr. Atkinson.—Is the color of the tooth changed to the natural color of the other teeth?

Dr. Bogue.—It is still lighter than his own.

Dr. Atkinson.—Is the lightness due to drying?

Dr. Bogue.—No; I think it is lighter naturally. Of course the root is filled with oxychloride, and a cavity with gold.

Dr. Kingsley.—Is it still tied in?

Dr. Bogue.—No; the string was cut a week ago.

Dr. Kingsley.—That beats my case. I have one that has been in for five years, but it is still tied.

Dr. Jarvie.—It may be in because it is tied.

Dr. Kingsley.—That is it exactly.

Dr. Bogue.—Mr. President, the small boy who was operated upon here by Dr. Curtis, a month or two ago, nitrous oxide being applied to obtund the sensibility of the tooth, complained of a great deal of pain later on, and I corresponded a little with Dr. Curtis in regard to it. He thinks the pain arose from pressure upon the pulp. The boy thinks not, however. He suffered all night, and the next day the gutta-percha was taken out and veratrine put in, and the excavation completed. Whatever the theories may be as to the effects of veratrine, hot air, or nitrous oxide, the boy said that under the veratrine he stood the excavating with perfect ease. Since then there has been no pain whatever; but up to Wednesday afternoon following his treatment there was constant pain from the time he left this room, not quite twenty-four hours. Dr. Curtis's idea is that the pain resulted from pressure. I mention it because we want to know both sides of the question as far as we can.

The President.—If there is nothing further to be presented under this head, we will listen to the paper of the evening, by Dr. Charles B. Atkinson.

Dr. Charles B. Atkinson here read a paper entitled, "Observations on Preparation, Discussion, Prevention, Reparation, Association, and Publication as applied to Dentistry."

(For Dr. Atkinson's paper, see page 591).

The President.—Gentlemen, you have a wide field open for discussion in the subject that Dr. Atkinson has presented to you in his very suggestive paper. Since the beginning of the meeting I have received a letter from Dr. Bödecker which bears upon one point of the paper. The secretary will kindly read that now.

The secretary read the following communication from Dr. C. F. W. Bödecker:

"60 EAST FIFTY-EIGHTH STREET, May 20, 1890.

"DR. J. M. HOWE:

"MY DEAR SIR,—I have read the abstract which you gave me of the paper Dr. C. B. Atkinson is announced to read before your society this evening.

"I am very sorry that I am unable to be with you this evening, as the paper contains many points of great interest. I have frequently considered the feasi-

bility of paragraph No. 21, and am of the opinion that if the dental profession possessed a home in which all dental meetings and clinics could be held, and in which home there was a library, a chemical, histological, and mechanical laboratory, where all dentists who are willing to do something for the advancement of the profession could assemble and receive information or instruction, that such a house would add more towards the advancement of our specialty than anything else. Our profession ought to have a home, which must be independent of manufacturing houses, as well as individual dental societies. I would therefore kindly ask you to make the following proposition to the Odontological Society for me this evening.

"Although I am not rich and have to work for the money as all of us do, yet, for the love of my profession, I am willing to give five thousand dollars (\$5000) towards a fund to build a home for the dental profession. I will, however, make this donation under the condition that I, or my wife Wilhelmina, as long as either of us are alive, shall receive an income from the above five thousand dollars amounting to five per cent. per annum. After the death of myself and wife, this money shall become the property of the dental profession. I am willing to deliver this money as soon as twenty thousand dollars have been subscribed for the above-named purpose, after sixty days' previous notice.

"Perhaps the Odontological Society and the First District Dental Society may each nominate some member to form a committee into whose hands this matter might be placed for further consideration.

"Very truly yours,

"(Signed.)

C. F. W. BÖDECKER."

The President.—Gentlemen, we will proceed with the discussion of Dr. Atkinson's paper; and at the close of the discussion any motion which any one present wishes to make in relation to Dr. Bödecker's very liberal proposition will be in order.

Dr. J. O. Flower.—Mr. President, if I may take the liberty of speaking, the article that Dr. Atkinson has read, supported by Dr. Bödecker's communication, I think is one of the best things that has ever been brought forward. I came here this evening on invitation of Dr. Atkinson, and I am so well pleased that I will state that if this plan is adopted I will make a liberal donation towards the proposed dental home. Although I am not in this society, I have always been received very well at the college here and by the different members of the profession in this city, and if they conclude to make a home for the improvement of dentistry, I will donate a liberal amount of money for the purpose.

Dr. Jarvie.—There are so many points covered by this paper that it is really difficult to select any of them to speak upon without a feeling that others are being neglected. There are three points that especially commend themselves to me. In the first place, I want to emphasize especially my approval of the plan of sending

copies or synopses of papers to a number of members of the society before the meeting at which they are to be read is held. Many times a paper of great value is read at our meetings, but of such a character that no one feels like discussing or having much to say upon it, consequently the value of the paper for that evening at least is lost; whereas, if a synopsis had been sent to members, they would have had time to study it and prepare their thoughts, and be able to give expression to them at the meeting. I think it is a subject that is worthy of being taken into consideration at this time. How shall we enhance the value of our dental meetings? We have adopted, apparently, a fixed plan at our meetings; and I think if we can get out of it we ought to do so. It is almost impossible to be one of a gathering of even half a dozen dentists, and exchange views, without each one carrying away something of benefit; but, nevertheless, I think we hold a great many meetings where our time is largely lost; and perhaps if a different system had been adopted we might have considered the time very well spent. We often have papers read and subjects brought up for discussion, and we talk a long time upon them without arriving at any decision. I have myself brought a number of cases before this society upon which I desired an expression of authoritative opinion, opinions that might fix a standard mode of procedure under certain fixed conditions, and I have been disappointed every time. I think that one point in the paper, advising that we might at times raise a question that was unsettled, and discuss and settle it, as far as the opinion of the Odontological Society, or any other society, could settle it, is a good rule of practice to follow, for in that matter we could get a system that would be of great value to ourselves, and to others who do not attend our meetings, but who read the reports of the proceedings in the dental journals. I think it would be a good thing if a series of questions were to be promulgated by the Executive Committee of this society, questions that are to-day unsettled. There are many conditions that present themselves in our practice of which we do not know the causes, and we are uncertain as to the best mode of treatment. I think if such questions were brought before a meeting, time being given for members to prepare themselves for the discussion by careful scientific research, we would advance very materially both as a society and as a profession.

Whether a biennial meeting would be an advantage or not, I do not know. We have now two or three national associations, and I cannot see any advantage that would be gained by multiplying these. I think it advisable to work through the associations

we have, or drop these and organize others, rather than form any additional ones. Whether new organizations would be any better than those we have is a question.

The subject of dental colleges is brought up in the paper. This society has a great interest in that question, because the future members of our profession are to come from the dental colleges. How shall students be admitted? under what conditions? what preparation shall we demand from those who seek to enter? and what acquirements shall we demand before the students shall receive their diplomas from these schools? All these are pertinent and important questions. The best dentists in the world are in America, and as poor dentists as are to be found in the world are in this same country. I am firmly of the opinion that a preliminary examination as to education ought to be demanded. It is required nominally now by the dental colleges, but how much it is worth as the requirement exists to-day you can judge as well as I. It ought to be a positive requirement before any student is admitted in a dental college; and the three years' course should be a progressive course. It seems to me ridiculous that a man should be asked to listen to the same lectures for three sessions. A man of good intelligence and application is handicapped from the beginning under the conditions that exist in the colleges to-day. He must attend three years, and the sluggard and the dullard are not required to attend any longer. I think acquirements, and not length of time, should be the standard. It is ridiculous to say that a bright, intelligent, and industrious fellow shall stay in college three years because some dull man requires that term of study. If the one can acquire in twelve months what the other man requires three years to accomplish, he should receive his diploma in twelve months, and not be compelled to wait for the duller or less industrious student.

Now, about this dental club. I am fully in favor of a dental club in New York City, or an organization of dentists in this city that shall own a building, having a room in it, say, of this capacity, and another room for larger meetings, also a reading-room and a good dental library. We have no complete or even good dental library in the United States that is open to the dental public. I suppose the one owned by Dr. A. L. Northrop is as fine a dental library as any in the country, but it is a private library, and although Dr. Northrop is very liberal in allowing access to it, we should have something more public. We ought to have a good museum and one of the most complete laboratories in the country,

where original scientific research could be carried on by members. All this would not be difficult to attain. It would cost a good sum of money; but if the spirit that Dr. Bödecker has manifested in his communication, and that shown by Dr. Flower, of Pittsburg, Pa., who also spoke upon the subject, should be followed by a few others, it would not take long to raise the necessary funds. But an enterprise of this kind could be started with very little money under a scheme like this: Suppose such a property as would be required would cost \$80,000; the probability is that one-half of that amount could be raised on bond and mortgage at four or four and a half per cent., and the other half, in the shape of a second mortgage bond, should be taken up by members of the club at the same rate of interest, issuing \$100 bonds up to the necessary amount. The meeting-room could be rented from time to time, and possibly all the time, which would bring in an income to the club; the dues of members, with the income from rents, should be sufficient to pay the running expenses, and the initiation fees be allowed to accumulate as a sinking fund to pay off the indebtedness. I know of social clubs, a number of them, that have been organized on that basis, within the last few years, and that have not been financial failures. I have no doubt but that the bonds would be very readily taken. I think this club question is well worthy of earnest and immediate consideration.

Dr. Duinelle.—I suppose, Mr. President, that I echo the sentiments of the gentlemen present when I say that the paper itself seems to indicate its own approval; that is to say, the propositions are made in such a way that we necessarily fall in with and approve its suggestions and endorse the whole plan. We have hardly time to discuss the matter at length and in detail, but so far as I am concerned, I approve of what is suggested by the paper at large. I think the time has come when we should make an advance and take a higher ground, a more exalted stand, and look to a broader and more extended future for our profession. I feel, for one, very much obliged to Dr. Atkinson for bringing this matter before us in the lucid and satisfactory way in which he has done it. It seems to have been an open question with us for a long time, only waiting the opportunity, seemingly, for some one to take the final and advanced position that he has taken. Without going into it in detail, I accept and approve generally the plan and system suggested. It goes without argument.

I cannot refrain from alluding to at least one of the propositions in the paper, notwithstanding the lateness of the hour. It seems

to me that the great advance which has been made in our profession has created a necessity which is foreshadowed in the series of interrogations in proposition No. 21. We do indeed need "a dental club, organized, equipped with efficient rooms and apparatus and library for clinical, experimental, and literary work, social intercourse, and the entertainment of guests." Such a club would be to us a *home*, where we might meet on common ground, where we could not only investigate and discuss the scientific topics of the day, but where, with a laboratory, embracing all facilities pertaining to art, chemistry, or mechanics, we might in mental effort make new combinations and new discoveries which would never have been attained alone. I believe in this union of purpose whether of the moral, social, intellectual, artistic, or the mechanical departments.

A club of the character referred to would facilitate the "creative good" within us, which ever underlies the spirit of progress; where, under the social range, human nature is at its best, and where, by the magnetism of contact of kindred minds, a thousand things might be discovered for the benefit and amelioration of mankind. A club whose deliberations would become authoritative. I believe in such a club.

Dr. Meriam.—Mr. President, I think this paper to-night shows a tendency of the time. There never was in the history of the world, I suppose, a period of greater material advance than the present, and at the same time more "divine dissatisfaction." It is interesting to note that there has been a great awakening of desire among all leaders of thought, presidents of universities, leading preachers in the pulpit, masters in science, and all students of ethics,—that is, of "motives and tendencies" to learn and teach the right way.

"Robert Elsmere," "Looking Backward," "John Ward, Preacher," have all outsold books telling how to make money. It is not strange that this spirit should enter our ranks. We may not be in danger, but the remarks to-night are evidence of the presence of this spirit, and we are asking, "What shall we do to be saved?" or, "How shall we best secure, maintain, and transmit our profession or specialty?"

One of the principles of Professor Agassiz was that the scientist has nothing to do with defending theories; that the duty of the scientist was to discover and place on record, and when he undertook to defend theories he was defending himself. The danger which Professor Agassiz looked forward to in the future of scientists was that they would spend their time in defending doctrines rather than in scientific research. We need societies and journals that

give an authoritative record of the history of our profession. Much of our trouble has been that we have no such record. This seems to me one of the things that the proposed club could do. It would afford a centre to which students would come not only to conduct experiments and to learn the latest results of the same, but also to learn dental history. Reports would come to an association of that kind, and as the government asks the National Academy of Science to determine questions of a scientific character, so the records of such an institution would furnish positive evidence for the profession.

There is a point in regard to the schools; it seems to me that students should be required to write papers to be read before some member of the faculty conducting a clinical or other conference; questions to be asked by other students, and finally the whole summed up by the member of the faculty having charge. This would be of great value to students. I know how easy it is for young men to drift away after leaving school, simply because they are not kept in hand; and those men would be held, and benefited by the practice of writing during their term of service in school. All society organizations are virtually an acknowledgment of the necessity for consultation; and in consulting over certain difficulties we prepare the material to solve other difficulties. A society is virtually an enlarged consultation. All scientific and professional organizations should be democratic; there should be no special privileges for any one member over another, and there should be no divided interests. "No man can serve two masters," and no man can be loyal to his profession or specialty and be an auxiliary to a dental depot at the same time.

Another thing in connection with this club should be a museum, where we can gather not only pathological specimens, but where also the history of the appliances of our profession may be represented. There are old practitioners passing from the scene who, if such a place were provided, would donate their libraries, instruments, and specimens, and the student could there learn the whole of the past of his profession.

I think also that a journal would properly find its home in such a club. We have certainly had nothing in the way of news of our profession. Visitors from abroad come and go, and very few in the profession know anything about it. There is no organized plan, and very little is possible under our present arrangement. There should also be a directory in connection with such an institution. It seems to me that in a great city like New York it should be no

more impossible for a man to have made a new dental instrument or dental engine than it is for a physician to have made a new surgical instrument. I do not know of any profession that has been so liberal or that has recompensed its workmen as our specialty has. The list should also include engravers, draughtsmen, etc.

The syringe which Dr. Kingsley has presented to-night is as well worthy of illustration as any study in microscopy, yet we have omitted such things in our journals in the past. I believe the thing is coming, and I hope we will live to see it.

Dr. S. E. Davenport.—I think a few words should be said in commendation of Dr. Atkinson's treatment of the subject of the publication of the transactions of societies. It has seemed to me that some of the most valuable hints are lost because the instruments or methods presented or described are not illustrated, and therefore the few only who are present at a stated meeting and have the opportunity to handle the instruments or appliances can get the idea and receive the benefit. I believe this society is greatly in favor of independent journalism, for it has so placed itself on record unanimously within the past six months, and after publishing its proceedings for many years in the *Dental Cosmos* it has now passed to the INTERNATIONAL DENTAL JOURNAL, the supposed leading independent journal. There will be improvements made in independent journals in time, for they are yet very young. Among those improvements I might mention the necessity for a prompt and business-like attention to copy received from the editors of dental societies, so that the transactions of any particular society may be presented to the dental world as rapidly as they can be prepared. It may be that some journals try to publish the transactions of too many societies, and therefore have not room for all to be promptly served. If that is the case then the journals must be enlarged, or multiplied in number, and the societies apportioned so that, as Dr. Atkinson has said, the matter shall not lose its force by being delayed. Of course, any single society reaches but few dentists if it does not publish its proceedings; its influence depends almost entirely upon what the readers of its transactions find.

Dr. Meriam.—Mr. President, one more remark about this proposed dental club, for I think it will come one of these days. I hope that it will be thoroughly guarded so that it cannot be made a hot-bed for tooth crown companies, or anything of that sort. If they are to have introduction there as, in the kindness of our hearts, we have given them introduction heretofore, I cannot imagine anything worse for our specialty.

Dr. William H. Atkinson.—I think we should not take counsel of our fears, but of our hopes and aspirations for better things. I think if we are always conjuring up bugaboos, we will always have plenty of them to deal with. We may sometimes nominate the brightest child a bugaboo and divert interest from it, when otherwise it would help on the very purpose of our lives.

What is science? Science means the food for the scientist to feed upon; and it has its analogue in the food of the body,—that is, the various materials that are not exactly in the condition in which the stored energy in them can be appropriated by the body, but need some sort of digestory process. Dentistry has proved to the world that it cannot comfortably subsist upon the *effete* pabulum presented by extant medical and physiological investigations, and in pathological manifestations and therapeutic management. We have been able to reduce polypharmacy pretty nearly to unipharmacy. The time was when physicians' prescriptions contained from five to fifteen elements, with the assumption, on the part of the writers of the prescriptions and the compounders of them, that they comprehended the digestory processes through which these combinations went, and the potency of the remedy as a whole.

What do we need most? Just what will help medicine most, and what would help commerce most. Let each and every department of legitimate human societary arrangement take care of itself; let the dental depots do their best; and if we are in earnest to do the work for each other that we feel the need of being done, and will accept the inspiration of the moment when the responsibility is sprung upon us, inquiring with that degree of earnestness that will not take no for an answer, but seeks a demonstration, then we will rise above all this low ground of fighting figments that we have conjured up, and that are nothing but bugaboos. The difference between our time and that of two hundred years ago is due to concentrated effort. Then men sought to supply their means of cure from individual effort, but it has at last dawned upon us that it is better we should have combination of labor, and that we should have it in the line of clinical teaching, and rid ourselves of the old creed that set limitations to our investigations, and prevent our gaining the real advantage there is in society in any of the departments of life.

The thing we most need to know is how the tissues are nourished. What is nourishment, what is poison, and what is remedy? We want to go behind nearly all that has been recorded on this subject, and secure a syllabus that shall stand to us as the multiplication-

table stands to arithmetic, as a measure by which we can at once pronounce a very fair supposition or hope that such and such will be the result of the administration of such and such remedies or management. There is no place where molecular change is taught, so far as I know, so as to reduce it to a practical presentment that will enable the individuals who deal with remedies to have even confidence in themselves that what they prescribe is legitimately prescribed, and that the result may be foretold. This idea has already found lodgement in the minds of a few noble men, such as Dr. Bodecker and Dr. Flower. You see how active it is when in a nascent state; it is not the *effete* trash that is postulated and recorded as the final truth for all time, but it is the truth of this present time and its necessities. Our ideas of diseased activity have entirely taken a new basis; the old is no longer useful, and we must take that which is fresh and new and obey it and succeed, or follow the old and fail.

The subject is too great and voluminous and profound, and too important for us to ignore any longer. Now the great thing is to lay out a plan. Do it modestly, but do it. Go to work if you know what to do; or, as I say to my pupils, if you do not know what to do, do nothing; wait, or ask counsel from others. Let us pool our knowledges and ignore our fears and our dread of the domination of his satanic Majesty that has ruled us through the old foggy notions that are dead, and ought to have been buried long since, and carrying this idea of having different schools of medicine and different specialties. Medicine should be regarded as a healing art, and anything that comes within that healing art and ministers to those who are suffering is what we want; and we do not care whether we are called medical men or not.

Dr. Kingsley.—I was especially requested to make some remarks upon this paper, and the synopsis was sent to me as well as to others. It would take too long for me to attempt to answer each one of those specific points, and besides that, I have not the ability. I have not sufficient interest in some of them to attempt to form an opinion. But there are a few things that I will notice.

"Does private pupilage tend to develop better and more capable operators?" I suppose that every old New England farmer, who has been on a farm from childhood, and lived to seventy or eighty years of age, would answer that there was but one way to learn farming, and that was the way he learned it, and that those fellows from the agricultural colleges, with their new-fangled ideas about chemistry, did not know much about farming; he would say, they

ought to go back on a farm and know how to farm first, and then they might go to an agricultural college; but to take an agricultural course before knowing anything about a farm is folly. As I am one of the old school who began in dentistry more than forty years ago, I am something like that old farmer. I feel that private pupilage is one of the best ways of learning dentistry. If you add to that a college course, that is so much clear gain; but no amount of college education in the world can take the place of the practical training of the pupil in a dental office, if thorough and under a competent instructor.

"Private pupilage permits the selection of material, which indicates that certain qualities must be inborn to make a truly professional man possible."

That is simply summing up what I have had to say.

"Charges for infirmary operations have a pernicious influence on the mind of the student, if not responsible for any other evil. It seems proper that every effort should be made to elevate the moral status of the student."

I do not know anything about whether charges for infirmary operations have a pernicious influence or not. It would take me a good while to find out. I would have to make a pretty thorough study of the matter before I could determine conscientiously, from a judicial stand-point, whether it has any such influence. There is a feeling lying back of the whole thing, and it is this: that an infirmary for dental or surgical patients should not impose a tax upon those poor patients who are invited to come there; and I do not think it is just to impose upon them a tax which is equal to the fee which some poor young dentist would charge who is anxious to get a clientele, and is willing to practise very cheap for the sake of making friends and showing what he can do. He argues, "If I do this thing well for this poor person, who cannot pay me anything but the cost of the materials used, he will be likely to recommend me to friends who are able to pay more." I do not think it is quite fair for a dental infirmary to charge as much or more than the young dentist is willing to do the work for. I do not know that it affects the moral status of students.

"Will not a biennial congress, not necessarily international, conducted on an organized, comprehensive plan, work our advancement?"

I do not know. I am inclined to think, as Dr. Jarvie does, that we have societies enough, particularly societies that meet annually. Think of what our First District Society has been doing in the last

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters.

2. The second part outlines the specific steps and procedures for conducting a thorough audit. This includes identifying the scope of the audit, gathering relevant data, and performing detailed analysis to identify any discrepancies or areas of concern.

3. The third part addresses the challenges often encountered during the audit process. These may include limited access to information, resistance from staff, or complex organizational structures that make it difficult to trace transactions.

4. The fourth part provides recommendations for improving the audit process. These suggestions focus on enhancing communication, ensuring the availability of necessary documentation, and implementing robust internal controls to prevent future issues.

5. Finally, the document concludes by stressing the long-term benefits of a well-executed audit. It notes that regular audits not only help in identifying and correcting errors but also contribute to the overall health and sustainability of the organization.

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enjoying the society of my *confrères* in dentistry. Therefore, on some accounts, I would like to see a dental club established where I could drop in and chat without being obliged to talk to the universe. It is one of the most embarrassing things for me to stand up and talk to the universe. When I get the report of my remarks I put a pen through a good part of them, and they print about one-fourth of what I say. In a club where one's remarks are not taken down, if I feel like speaking out very strong I can speak; but one cannot do that when it is going into print.

It is quite possible that a dental club can be established and made a success, provided the attempt is not also made to run a bar and restaurant. The bar and restaurant have sunk more clubs in this city than anything else. Perhaps some of us would like a bar and restaurant, but if the club is to succeed the bar and restaurant should be on the outside. So much for the synopsis.

Now, there have been some remarks made this evening that galled me. I am speaking plain, old-fashioned English, Anglo-Saxon. Hardly a speaker has been on his feet that has not talked about "our specialty," and in the next breath about "our profession." One gentleman, in his remarks about independent dental journalism, said, what I did not know until this evening, that this society has committed itself unanimously to independent dental journalism. Now, as near as I can find out, the independent dental journalism which this society has committed itself to, if it has at all, is made up of the veriest twaddle. That is plain English. It is nothing but twaddle. Independent of what? Independent of a company of publishers that are able to publish a thoroughly creditable journal? Is that independent dental journalism? Not according to my idea at all. Independent dental journalism should represent dentistry in its independence. I tell you, gentlemen, that what is now doing more to menace the integrity of the dental profession—I use the word profession—than all else is not the men who are preparing materials and furnishing goods for dentists' use, but it is the class of men who are trying to attach dentistry to another profession. I got on board the "Augusta Victoria" at Hamburg, last October, and I was surprised as well as gratified to see one of my colleagues coming on board at Southampton. The gentleman, I found, was one of the directors of one of the journals we have heard about. I asked him who controlled the journal, and he made me an answer. As we dropped into further conversation upon the subject, I made some remarks, referring to the title of their journal being a misnomer; that it was not independent at all;

that it did not stand up for dentistry as dentistry, but stood for dentistry as something else; and I asked him why not start out plainly and boldly with real independent journalism, and stand up for dentistry as an independent profession. He could give no reason.

Now, what does all this talk about a club point to? The desire is to have a dental club. Can it not be seen that dentists are all the while making themselves more and more pronounced as a separate profession, and yet for fear they won't be recognized as a specialty they do not dare to stand up for themselves and say, "We are dentists and we are proud of being dentists." Our main object should be to make dentistry the best dentistry that can be made, without being anxious to have it tacked on to the end of something else. We are doing that now; and this movement for the formation of a dental club only shows that the tendency is in that direction, in spite of a class of men who would drag it down.

Dr. Jarvie.—Mr. President, I want to see some recognition taken of this letter of Dr. Bödecker; and I move you that the secretary be directed to acknowledge the receipt of the letter, and that the communication itself be referred to the Executive Committee, together with the proposition of Dr. Flower.

Motion carried.

On motion of Dr. Dwinelle, a vote of thanks was tendered to the essayist of the evening, Dr. Charles B. Atkinson, for his very able paper.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE American Academy of Dental Science held its regular monthly meeting April 2, 1890, at the Boston Medical Library Association rooms. President F. N. Seabury in the chair.

Dr. H. A. Baker read a paper on "The Use of a Matrix in contouring Fillings." (For Dr. Baker's paper see page 608.)

DISCUSSION ON DR. H. A. BAKER'S PAPER.

Dr. Meriam.—I believe, Mr. President, I am limited to the presentation of new forms, but I think there are hardly any really new forms to-day. We have practically two,—a band encircling

the teeth, or a plate held against the teeth by a wedge. The Baker matrix certainly comes between the two. It has the value of the band matrix, with also the advantage that it does not curl away from the teeth at the cervical wall, as do the band matrices that require, in addition to the ordinary tightening by a screw, a wedge to hold them against the teeth at that point. I have always regretted that Dr. Baker omitted to publish a description of his matrix, that it might bear the date of its introduction. In these days when companies are forming on every side of us,—when we know not what dental meeting may contain a spy, or what invention may be taken from the profession,—these matters are of importance. We should not publish our inventions merely for the fame and honor of the thing, but that the profession should be able at least to give some history, some source, from which our instruments spring. I know the claim is made that the instrument-case is the real birthplace of the profession; but, gentlemen, in spite of all the practitioners who are ready to echo that sentiment, I think that it is hardly true. Dr. Baker's matrix should have been given a name, and all the various forms that have grown from it should have been called a modification or improvement of the Baker matrix. I meet the idea in all parts of the country, but I have rarely ever heard that Dr. Baker was the inventor, and I have often been obliged to show that he was.

I will present, first, some forms that were sent me by Mr. George Brunton, of Leeds, England, who offers a matrix that is tightened with a screw clamp, and also one that tightens with a screw wedge, or wedge clamp. These two forms I have here. They were sent me by Mr. Brunton through the courtesy of Dr. St. George Elliott, who was coming to this country. He also sent some to the Dental Schools of Harvard University and the University of Michigan, and, as some of the instructors of the former school are present, they can speak of their merits more intelligently than I am able to do. I think his key or wrench is the best I have ever seen, for, instead of the usual unsteady ones which we have, this has a guide, and by removing the ring it can be set at a different angle.

The matrix I prefer, in case only one wall is to be supplied, is a simple piece of steel, thick or thin, according to the distance between the teeth. For shaping the steel, the ordinary optician pliers (Stubbs's) gives a good form for bicuspid. The rounder pair of the French make (Tissol's) gives a better form for some teeth. Cold-rolled steel, with its evenness of working, the various thick-

nesses that are offered, and the ability to forge it somewhat, even when cold, into the shape we desire, is the most valuable. It is rolled to the thinness of five-thousandths of an inch in this country, and the French and Swiss watchmakers roll it down very much thinner. It can be procured from Goodnow & Wightman, Boston, Mass.; Wilkinson & Co., 184 Washington Street, Boston, Mass.; Chandler & Farquhar, 177 Washington Street, Boston, Mass.; Montgomery & Co., 103 Fulton Street, New York City; Frasse & Co., 92 Park Row, New York City; Peter A. Frasse, 95 Fulton Street, New York City; Niagara Stamping and Tool Company, Superior, corner Randall Street, Buffalo, N. Y.; Palmer, Cunningham & Co., 607 Market Street, Philadelphia; Simmons Hardware Company, St. Louis, Mo.; H. A. Pickering & Co., Cincinnati, Ohio.; Charles Strelinger & Co., 86 Woodward Avenue, Detroit, Mich.; Besley & Co., 175 Lake Street, Chicago, Ill.; Justinian Caire, 521 Market Street, San Francisco, Cal.; E. L. Parker & Co., 301, 303 South Charles Street, Baltimore.

I am keeping a list of these places, and shall be glad to be informed of others. The combination of instrument-makers can keep this steel if they wish; its cost is, I believe, about thirty-five cents per pound, and I am sure they will be glad to have us publish a list of places where it can be procured.

A remark has been made that the better a matrix fits the worse it is. In many cases there is danger in narrowing the orifice of the cavity. I saw Dr. Bogue using a flat piece of steel with a broken end of a gum-lancet for a wedge. I think he told me he knew of others who had used it at about the same time as himself. In one case I have used the wedge itself as a matrix. The flat steel has this advantage,—that the matrix fitting against the gum can, with this narrow wedge, be tipped back against the adjoining tooth, and the walls of the cavity are exposed to view and can be reached at all points by the plugger. The excess of gold is only at the edges of the matrix. I have made some wedges for this matrix, shaped like a knife-blade, except that they are more curved, and with the thicker end flattened like a spoon-handle, opposite from the blade of the wedge; this makes them easy to insert or remove with the fingers without the aid of pliers. They are easily made of differing lengths and thicknesses, of copper or German-silver wire. In some the flat end is curved back so as to rest against the gum, holding the rubber dam away from the tooth.

I would like to call attention again to the use of gutta-percha as a matrix, not only for filling with amalgam but with

oxyphosphate, and especially for applications of medicine in treatment, and the ease with which a molar tooth can be converted into a simple tunnel with gutta-percha as a matrix. And also the safety with which arsenic can be applied,—putting on the rubber dam, varnishing the edges of the cavity and the adjoining tooth, using a soft, low grade of gutta-percha, making the application thin, and covering with cotton and another piece of gutta-percha. When the patient returns for removal of application, only the latter piece of gutta-percha need be removed, leaving the funnel intact, the arsenic or other application may be syringed out, and further treatment given if needed. The certainty of result, where medicine is in contact with the tooth without being diluted with the fluids of the mouth, is very much increased, and it has the added advantage that, as far as odor is an indication, we have it isolated from fermentation, and know that it comes entirely from the cavity, if there is any odor.

There is another advantage which the matrix has in the Buckland method of inserting amalgam. It is his practice to put oxyphosphate against the pulp wall in shallow cavities, and packing the amalgam against that, taking care of all the edges, and forcing some points of the amalgam into the soft cement. This method can be reversed with the matrix by packing the amalgam against it and against the side wall, then placing thin cement against the pulp wall and covering with amalgam. Results will be better if the matrix is left in place until the amalgam is hardened.

The gutta-percha matrix can be used for oxyphosphate, and, by covering the crown of the filling with gutta-percha after insertion, the filling can be protected from moisture as long as need be.

Dr. Wilson.—I have a matrix consisting of a thin band of steel; on the ends of the steel are two posts, one threaded and the other smooth, and it is tightened by a screw. I prefer it to any other matrix.

Dr. Meriam.—This thin, hard rubber, furnished by dealers in electrical supplies, makes a matrix that is very readily adapted. A little heat softens it so that it is readily cut with a pen-knife.

Dr. G. T. Baker.—I would like to present something which I have here that I have used for a matrix with a good deal of satisfaction. It is made of Dr. Parmly Brown's German-silver polishing strips and the Loe pull-back for a screw. A piece of silver, a little longer than will reach around the tooth, is cut off and a hole punched through both ends, through which the screw passes into the nut. It is then tightened with the key. I will pass it around.

Dr. Stevens.—I want to emphasize one thing that Dr. Baker said, and that is in regard to the durability of cement fillings at the cervical wall when the filling is properly inserted. I have made the assertion to some of you here that my experience was that cement fillings did not waste away at the cervical wall when they were properly inserted. Dr. Baker is right with respect to that point. I had a case the other day where a cement filling had been in the mouth six or seven years, and all that remained of the filling was at the cervical wall, and it has been my experience that a cement filling made with any good cement, and properly inserted, will last longer at the cervical wall than at any other point.

Dr. Barker.—As long ago as my student days I saw a matrix used. It consisted of the uncut and drawn tempered end of a separating file supported by wedging. This may have been the forerunner of that class of matrices of which Dr. Louis Jack's is a good type. Such matrices are available only when teeth are in contact. Where teeth are not in contact it is necessary that the matrix embrace the tooth to be operated upon, and not depend for stability on an adjoining tooth. To meet this want various loop and band matrices have been thrown on the market. One of them, which I procured of Dr. Coull, in Washington, I have used with reasonable satisfaction. It is essentially the same as the matrix Dr. Wilson has described to-night. In my own practice I have found that a matrix improvised at the chair is more valuable than one I can buy. My plan is to use a thin strip of copper, brass, or German silver having one side silver plated. I cut off a piece of the metal a little wider than the depth of the cavity, loop it about the tooth, and grasp the free ends with a pair of pliers, thereby bringing the matrix firmly about the tooth. The band is then removed and soldered with soft solder, after which it is slipped back onto the tooth. If you have done your work accurately, you will find your matrix fitting with reasonable firmness, but, if need be, you can then insert a simple wedge at the point where you have done your soldering and have a matrix, all things considered, much better than anything else I have seen used.

The difficulty with a matrix is to get it close to the cervical border. This can be accomplished by the use of burnishers. The best result is attained by preparing the cavity and filling it with gutta-percha, or some material of that kind, making the contour of just the form needed. Form the matrix to this and then remove temporary filling.

There is another subject of which I wish to speak,—and that is,

the incidental matter which Dr. Baker brought up, and which Dr. Stevens has alluded to, concerning the dissolving out of zinc phosphate fillings. I supposed that I knew how to handle oxyphosphate, or zinc phosphate, as well as anybody. I have put in a good many such fillings, I think, intelligently and with care, following the directions as we get them at the dental depots. In spite of care, the zinc phosphate fillings, after a couple of years, have dissolved and disintegrated, whether by the action of alkalies or acids I do not know. I only speak of my own practice. I have ceased entirely to rely upon zinc phosphate filling at the cervical wall. I always use a gutta-percha there and build down with a zinc phosphate. If there is any principle or method by which we may use zinc phosphate fillings more effectually, I would like to know it. Dr. Stevens says they should be kept dry. Let me say that follows as a matter of course,—it ought to go without saying that we insert zinc phosphate fillings under conditions of dryness. I use the rubber dam almost everywhere, and allow not less than twenty minutes to half an hour, or even longer if I can get the time, for a zinc phosphate filling to harden,—and yet I get these results. I do not use the zinc phosphate in a creamy state, but in a condition of good consistent putty, so that the mix is reasonably firm, and allow it to set unmolested and undisturbed.

Dr. Smith.—I would like to ask the gentleman if he uses a matrix in putting in his zinc phosphate fillings?

Dr. Barker.—No, sir, I do not.

Dr. Smith.—By doing so you will find that you will get more solidity to the fillings.

Dr. Barker.—Do you claim that there is any efficacy in the material being put against a metallic surface?

Dr. Smith.—Not particularly, but you could pack the filling in so much more firmly.

Dr. Meriam.—I have never seen either oxyphosphate, oxychloride, or gutta-percha that did not dissolve in an acid mouth. The oxide of zinc itself is soluble in both acids and alkalies, and, in buccal cavities in the lower third molars, what is called the "rotting" of gutta-percha is really the dissolving from it of the oxide; and I question if, in this position, phosphate of zinc fillings would last even if put in with a matrix, assuming that the patient did not give increased care, and thus change the conditions. We should remember that the phosphate of zinc may be soluble in one mouth and not in another. I keep in my medicine-case a dilute acid, the "pickle" of gold workers, which I use when I am doing

small soldering. After mixing my oxyphosphate on the ordinary porcelain slab, I wipe the adhering cement from the slab with a little of this acid on cotton. Of course we have no acid so strong as this in the mouth, but it shows that the cement is soluble in acid.

Dr. Baker.—My point is simply this: by using a matrix it will enable us to do what we cannot possibly do without it. We get a uniform solidity to the filling.

Dr. Meriam.—I will show a new root-canal drill that was also sent over by Mr. Brunton. This has come in a letter since he sent the matrices. There is nothing new about it, with the exception that it is made from piano-wire, and is supposed to give us a point that will not break in the roots. Mr. Brunton writes that it is to be mounted for the hand-piece. When I go to New York I shall give it to Mr. Schmidt, and any one who wishes can order them from him.

I have a letter here from Dr. J. Morgan Howe, who sends me one of his new cervical retainers and clamp. He writes me as follows:

"The point of originality, which must be protected from appropriation by any enterprising egoist, is the invention of the cervical dam-retainer, which is a face-piece, so shaped as to be capable of being bound to the tooth by a clamp, or by any other means (no matter what), retaining the dam above the cavity, and at the same time permitting access to it. If you will remove the clamp with the forceps (from the tooth sent you), leaving the face-piece *in situ*, held by a piece of floss silk, you will see, I think, that where teeth are not very near to their neighbors a face-piece could be bound to the tooth with thread or its equivalent, if it were found desirable to use such means instead of a clamp. The retainer or face-piece can be modified in shape to any extent required for various cases, and still retain its identity. In individual cases (especially molars) it might be found best to make a retainer somewhat U-shaped, and bind it by the free ends to the tooth with floss silk. Then apply the dam, using thin rubber.

WILLIAM H. POTTER, D.M.D.,
Editor American Academy Dental Science.

THE AMERICAN DENTAL SOCIETY OF EUROPE.—
SEVENTEENTH ANNUAL MEETING, PARIS, AUGUST
6 AND 7, 1889.

(Continued from page 481.)

First Day.—Afternoon Session.

DR. WILHELM SACHS read his paper on "Various Modes adopted in filling Teeth" (see page 600), followed by Dr. Bryan's paper on "Improved Dental Ledger and Book-Keeping" (see page 606).

DISCUSSION ON DR. SACHS'S PAPER.

Dr. Mitchell.—I think the greatest amount of praise is due to Dr. Sachs for the interest he has taken in the society. There is nothing that can be said in regard to the paper, the work speaks for itself.

Dr. Bryan.—There is one point which Dr. Sachs has overlooked, in regard to this paper, and that is the classification of the different teeth. On the last page, No. 1 represents a central incisor right side upper jaw, and he indicates the right and left upper and lower teeth very graphically and very quickly; that is a point in recording our operations of which we can take advantage, saving a great amount of space.

DISCUSSION ON DR. BRYAN'S PAPER.

Dr. Mitchell.—From the fact that all the surfaces of the teeth are exposed here, I think it a decided step in advance. It was not quite clear whether the operations or the teeth were numbered.

Dr. Rosenthal.—Mr. President, it seems to me that each operation should be numbered; for instance, if you have a tooth to be treated, three, four, or five times, it should be numbered at each time, and all you need to do is to refer to those numbers on your diagram, and you have the whole history recorded for years and years for reference, when the patient comes.

Dr. Elliott.—Of course, any system to have a general adoption must be exceedingly simple and brief. According to my observation, the average dentist is a lazy man: many keep only one or two books, others half a dozen.

Dr. Rosenthal.—There are no deciduous teeth on your chart. Have you not sometimes milk teeth to which you want to refer?

Dr. Bryan.—I don't keep a record of operations on temporary teeth; but I would say that Dr. Rosenthal is quite correct with regard to reporting the operations. We treat a tooth, fill it temporarily, and by the time the patient has this tooth again treated, we record it as, say, No. 16, right opposite No. 1. Then we fill it with cement. This temporary filling is worn out three years afterwards, and we fill it with gold. We refer to our numbers, it may be ten years afterwards, and we see by Nos. 1-16, etc., that it was treated by an antiseptic method; then we find that No. 16 represents that tooth as having been filled with cement, gold, etc.

If one desires a condensed system of notation, he will find, by referring to Dr. Cunningham's valuable work on the subject, that he has all the necessary abbreviations and paraphernalia of a complete system.

Dr. Spalding.—My practice has been to discard all diagrams and simply describe my filling as I do it; for instance, if I make a gold filling in a right superior central incisor, I simply put down the initials of the words.

Dr. Elliott.—Why not mesial and distal instead of the letter?

Dr. Spalding.—Yes, certainly, that might do; but I do not like that, and it saves a great deal of time.

Dr. Bryan.—Here you have a pictorial illustration which will last over fifty years for the use of yourself or your successor.

Dr. Miller.—I will show you on the black-board how the students at Berlin mark their operations.

Dr. Spalding.—Well, no outsider would understand that.

Dr. Miller.—There is no need; it is only you who look at your books.

Dr. Elliott.—How do you manage when there are two fillings in the same tooth; do you use the same form for each?

Dr. Spalding.—I do.

Dr. Rosenthal.—If you have a record, you know at once what you have done for years and years.

Dr. Spalding.—Very true; but, in a general way, I find my method quite sufficient.

Dr. Bryan.—A patient occasionally comes and declares that the filling which you put in recently has come out; you can by showing him your chart easily undeceive this patient. If a patient is with me for fifteen years (and I hope to be practising so long), I shall have every operation on his chart.

Dr. Elliott.—There is one point which seems to be entirely ignored, and that is to give us the data for the durability of different

filling-materials. I commenced ten years ago a system which was exhibited before the society at Vevay. I mentioned the fact that I tried to have my books self-explanatory, so that my successor could take the books and would be able to understand them very readily. The point of some importance which I aimed at in the diagram was the line giving room for notes. I have found no difficulty in keeping that up for ten years, and next year I purpose publishing a ten years' report, and I hope to get at some facts which may be of value. Of course you know that this kind of thing cannot be thorough; you can readily see that it is a very great labor, and it will probably take a secretary three months to get at the report and prepare data.

(To be continued.)

SEVENTH ANNUAL SESSION OF THE MARYLAND STATE DENTAL ASSOCIATION.

(Continued from page 551.)

REPORT OF COMMITTEE ON DENTAL LITERATURE.

It is not to be expected that a youthful and vigorous profession like ours, which touches and fraternizes in the most friendly way with medical science and mechanical arts, which rubs elbows with business, and hobnobs with commercial enterprise, should have in its brief existence accumulated a large and extended literature. Dentistry is just now vigorously aggressive and pushing forward, rather than employed in recording what it has done, and has had but little time for contemplation or retrospection. The reports from the various dental associations smack of conflict and tell of an active, throbbing life, vigorous, energetic, and inspiring; in fact, we may justly say of dentistry that it is too busy making history to have time to write it.

Nevertheless, much may be said of the records of our achievements, for that about comprises our literature. The literature of our profession is keeping pace with its development, and, in the main, is a faithful record of its methods and results. The close of the year marks the production of numerous text-books in dentistry, the mere enumeration of which were an unprofitable task, and the discussion of which, neither my time nor your patience will allow. It is not possible, however, to refrain from recording the feeling of

gratification in noting that in German, French, and English have appeared technical works, whose object is to treat as a whole the system of dentistry. The study of the profession as a distinct calling is thus seen to be an assured fact, and a worthy aim of scientific men; this, of itself, independent of the value of the works referred to, is a fact upon which the profession should be congratulated.

Among other evidences of this same fact and in recognition of the discriminating continuity of effort as well as of ripe experience and mature judgment, dentists may note with pride that the work of securing in a series of volumes, exhaustive and learned treatises upon all subjects relating to dentistry, began several years ago by Professor Wilbur F. Litch, has been successfully accomplished, and the "American System of Dentistry," we predict, will long be the standard work of reference in this country, and will add lustre to the name of American dentistry abroad.

A resolution introduced into the Association of Faculties in 1886 is beginning to bear fruit in the appearance of text-books, bearing the approval of that association, and evidencing the scrutinizing care, skilful arrangement, and clear and forcible expression of experienced teachers. The completion of this series of text-books will mark a new era in dental education.

Much that has been written in the last year in the journals has been descriptive of bridge-work and the various methods of its preparation; and Dr. Evans has exhibited rare skill and judgment in compiling and selecting from these, furnishing the profession a book upon bridge-work, in which may be found a description of all the best methods.

The journals have performed and are performing their function with skill and ability. They publish with fidelity and without prejudice the proceedings of associations and original communications. There is no reason to complain that we do not get an opportunity to be heard, for in some one of the various journals the ambitious and able dentist can always find an impartial forum from which to address and teach his brethren. It is largely, we think, to be imputed to this spirit of fairness, this desire to exhibit, as they are, the results of professional labor and investigation, that it has sometimes happened that our desire for a fuller editorial column has gone unsatisfied; the editors have wisely considered it best to reproduce the thoughts and opinions of the body of the profession rather than those they individually hold.

We have been glad, then, to note the very marked improvement

in the majority of the journals. The best are remarkably clear and free from obnoxious and distasteful advertising puffs, and from an improper appropriation of reading pages to that purpose,—and this despite the fact that most of the journals are published by dental depots and dental-supply firms. In fact, the general dignity and correctness of our publications compare most favorably with those of other professions. If it be not invidious to discriminate, we would like, with no little pride and with the confident hope for its success, to refer to the recent organization of a society of the most prominent men in our profession, under whose direction and with whose support the INTERNATIONAL DENTAL JOURNAL has made its appearance as the successor to the *Independent Practitioner*. As this is an effort at independent journalism, it certainly demands the support and encouragement of every man in the dental profession who has its advancement at heart. We are glad to report that this journal is ably edited, has been successful, and is making new friends every day.

Your committee regret that scantiness of time has made it absolutely impossible to render a report worthy of the profession and of the occasion. They can but note impressions and suggestions which the rapidly enlarging literature of dentistry has made upon them; can but convey to you a hint of that ever-present sense of activity, development, and growth with which the profession and its literature impress them; and congratulate you that we are awake to the demands of our chosen calling and moving towards the goal.

B. HOLLY SMITH,
Chairman.

DISCUSSION ON REPORT OF COMMITTEE ON PUBLICATION AND DENTAL
LITERATURE.

Dr. F. J. S. Gorgas.—Mr. President, I would be glad to hear Dr. W. X. Sudduth make some reply in reference to that part of the subject which pertains to the great influence of editors. I desire simply to make one suggestion of a practical nature, which has just occurred to me. I refer to the difficulty of procuring from the members of the dental profession contributions of articles for publication, and I assume that in this respect the experience of publishers of dental journals is the same everywhere. While, as a rule, the members of the medical profession seem disposed to ventilate their views and to give the public the benefit of their experience, we find, on the part of members of the dental profession,

mittees you will probably understand how the pressure is brought to bear.

Success in dental journalism in this country is to be most readily attained by the publisher or editor making himself known to or identified with dental societies. As an editor and publisher of a dental journal I have made it a special rule to make myself known to dental societies; and through them I have sought to secure the literature which was necessary for our journal. I have experienced, as Dr. Gorgas has said he has experienced in connection with his journal, in our work a great deal of difficulty in getting good literature; and it has seemed sometimes as though it were almost impossible to look ahead for six months and foresee sufficient material for publication of an interesting character through that period.

Another consideration is that when the contributions of members who have been appealed to do not appear in the JOURNAL, they are apt to take offence at me as the publisher for that reason. But it should be recollected that the editor must be allowed to exercise some discrimination in the selection of matter which is to appear; otherwise his publication would not be up to the standard. I would like to say to you, therefore, although I am a stranger to many of you, that if at any time you feel that your productions have been slighted, you should remember that the editor is in a very trying position, that it is hard for him to please everybody, and that, above all other considerations, he must have the interest of his journal at heart rather than the interest of individual members of the profession.

Dr. Kirk.—Mr. President, I called Dr. Sudduth out in the expectation that he would give us a different side of the story from that which he has stated, but he has not done that, and I will tell it myself.

Dr. Smith has called attention, in his report, to the necessity of supporting our dental journals. Now, the success of a dental journal does not depend upon what is published in it or upon how much matter is accumulated for it, but it rather depends largely on how that journal is supported by the profession at large. I thought that Dr. Sudduth would like to say something upon that phase of the question,—in other words, upon the subscription list. After the cream of the thought of the general profession has been put into printed form it is disheartening at times to observe how little interest is taken in the matter when it is presented to the profession in that shape. There seems to be a feeling of general

what we may call a diffidence to do likewise; and this diffidence seems to exist to a degree corresponding with the disposition of medical men to be heard.

It is indispensable to the success of a journal devoted to a specialty that it should be instructive and attractive; but this it cannot be unless members engaged in following that specialty lend their assistance towards the accomplishment of that end. If our journals were able to secure contributions by paying for them sums of money the case might be different, for the stimulus of compensation would certainly produce valuable results. Certainly every dental journal in the country would be improved if each would maintain on hand a sufficient sum for the encouragement of such talent as is to be found in the ranks of our profession.

The publishing of dental journals is an up-hill labor when the members of the profession do not contribute literary matter by way of support. We have experienced that difficulty here in Baltimore, and perhaps to a greater extent than it has made itself felt in the case of the *INTERNATIONAL DENTAL JOURNAL*, because a publication like that can undoubtedly command more literary support than can be made available in our own city.

I may say here that we have been much pleased with the recent appearance of the *INTERNATIONAL DENTAL JOURNAL*. It presents evidences of marked improvement in contrast with its former appearance.

Dr. W. Xavier Sudduth.—Mr. President, Dr. Gorgas has spoken upon a point that is well deserving of attention, and that is in regard to the production of literature or the possibilities of obtaining literature for dental journals,—a question to which I have given more thought, perhaps, during the last eighteen months or two years than to any other question.

Dr. Gorgas has advanced a statement upon which I differ with him, and that is that if dental journals were supplied with sufficient money to enable them to pay for literature they would get it. I would say to the doctor that I do not believe they would get it. I do not believe there is money enough in the coffers in any of the manufacturing centres of this country to buy the literature of the profession. It is not for sale. The only way you can get it is by the stimulus of personal appeals before dental societies. Hired writers in this country will not succeed. It is only through personal intercourse and through the pressure that is brought to bear upon members of the profession by committees that we can get literature for dental journals; and if any of you have served on such com-

mittees you will probably understand how the pressure is brought to bear.

Success in dental journalism in this country is to be most readily attained by the publisher or editor making himself known to or identified with dental societies. As an editor and publisher of a dental journal I have made it a special rule to make myself known to dental societies; and through them I have sought to secure the literature which was necessary for our journal. I have experienced, as Dr. Gorgas has said he has experienced in connection with his journal, in our work a great deal of difficulty in getting good literature; and it has seemed sometimes as though it were almost impossible to look ahead for six months and foresee sufficient material for publication of an interesting character through that period.

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apathy among the profession on this point. I may say it is humiliating to find how small a proportion of men engaged in dentistry ever read a dental journal. That point is one that I would like to see enlarged upon by discussion. The practical question is how many of the men engaged in dentistry actually subscribe to dental journals and pay their subscriptions?

Friday, December 6, 1889.—Afternoon Session.

DISCUSSION ON PUBLICATION AND DENTAL LITERATURE RESUMED.

Dr. R. Findlay Hunt suggested a correction of that part of the minutes of the morning session, as read by the secretary, which purported to give the substance of the resolution which was adopted on motion of Dr. Grady, concerning the preservation of sets of the *Dental Cosmos*, etc. He explained that the resolution, before being voted upon, had been modified, he thought, so as to empower the Committee on Publication to act on the subject according to their discretion.

AN APPEAL FOR THE DENTAL PROTECTIVE ASSOCIATION.

Dr. R. B. Winder spoke briefly in advocacy of the claims of the Dental Protective Association to recognition and support by the dental profession generally.

Referring to a letter he had received from Dr. Crouse (who, he said, was the head and front of the protective movement), Dr. Winder explained that the organization had been specially designed for the defence of dental operators against encroachments upon their rights by the International Tooth Crown Company. The Protective Association pledged itself to defend the case of any of its members who might be sued by that company. He said that the movement for mutual protection has extended quite generally throughout the country, particularly in the north, where bridge-work is more frequently made use of than elsewhere. He assured his hearers that the individual protection which has been guaranteed is an actual existing fact, as he knew of no instance in which a member of the Protective Association has been interfered with since the formation of that organization. He urged that it was both a necessity and a duty for the profession to strengthen itself by resistance not only in this, but in every other case in which it has been attempted to foist a fraudulent patent upon it.

He denounced the International Tooth Crown Company as

having attempted to gain its end by a resort to the most unscrupulous means, and cited instances in support of his charge that the demands made by the company upon the profession, with respect to patents, etc., were of a character which stamped them as most outrageous impositions.

After referring to the developments attending the investigation now being made by a committee, constituted at the last meeting of the American Association at Saratoga (of which committee he was made a member), Dr. Winder appealed to the feeling of State pride of the profession in Maryland, and urged his hearers to unite with their brethren of other States, so that that power which springs from unity of purpose and concentration of action may make itself felt.

Addresses endorsing the sentiments expressed by Dr. Winder, and in further explanation and advocacy of the protective movement, were made by Dr. A. J. Volck, Dr. E. P. Keech, Dr. M. W. Foster, Dr. R. F. Hunt, and Dr. D. Genese.

THE REPORT ON HISTOLOGY, ANATOMY, ETC.

Dr. R. Grady, by way of substantiating the statements contained in the report previously read by him, here read quotations from cyclopædias, theological dictionaries, and other sources.

Friday, December 6, 1889.—Evening Session.

After the transaction of routine business, the installation of officers, etc., the association and its guests were entertained by W. Xavier Sudduth, A.M., M.D., D.D.S., of Philadelphia, in an essay on life, from a biological point of view, with stereopticon illustrations.

Election of officers of the Maryland State Dental Association for 1890: J. Emory Scott, D.D.S., President; C. B. King, D.D.S., First Vice-President; John C. Uhler, M.D., D.D.S., Second Vice-President; W. W. Dunbracco, D.D.S., Recording Secretary; J. J. Williams, M.D., D.D.S., Corresponding Secretary; F. H. Davy, D.D.S., Treasurer.

Executive Committee.—C. M. Gingrich, D.D.S., A. Price, D.D.S., A. P. Gove, D.D.S.

W. W. DUNBRACCO, *Secretary.*

Editorial.

PRESIDENT FOSTER'S ADDRESS.

THE importance of the questions discussed in the address before the American Dental Association at Excelsior Springs, Missouri, can scarcely be overestimated, and, coming as they do from the official head of the representative association of the United States, they should receive careful consideration. It is unusual, perhaps, for the president of the association to discuss questions of this character; but if it is novel, it furnishes a most excellent precedent, and one worthy to be followed by those who may succeed him. The influence of his broad outlook over a series of subjects most interesting at the present time must be widely felt, and should be thoughtfully pondered.

The question he prominently desired to be considered is the necessity for the unification of the laws regulating dentistry, and his arguments based on the present chaotic condition of these enactments, it seems to us, should have special consideration by those most intimately interested.

It is not surprising that the crudities of legislation in this direction should have resulted, as a whole, in a mass of ill-considered statutes. This was the natural result of inexperience. Law is the outgrowth of necessity. It is an evolution from the extreme liberty, bordering on license, on the one hand, to an organized effort at restraint on the other. It is the child grasping at the meaning of mature ideas, but incapable of formulating them into connective thought.

The older professions in this country have managed for long periods to develop under the force of a public opinion that demanded the highest culture attainable; but this, powerful as it has been, has had only a moderate degree of success. Dentistry has not had until very recently this moral force behind it. The public have been slow to believe that it was more than a trade and was amenable, as ordinary business, to the laws of demand and supply. Hence there seemed to be a necessity for force measures, more imperative, possibly, in dentistry than in medicine. The line had to be sharply drawn somewhere, and the various State organizations

began the work by petitioning the legislatures for relief by the enactment of certain laws for the government of dental practice. It may be considered remarkable that, under the circumstances, the work has been as well done as we find it in the statute books.

The question of bringing law to bear on a body such as ours has been seriously questioned by some of the ablest men in our ranks. It is one difficult of solution, and time can alone determine whether the result is to be for the good or ill of dentistry in this country. It is conceded that the condition a few years back, when the American degree in dentistry was almost universally discredited, was ample justification for active measures looking to the entire eradication of the evil influences that were sapping the very life of our profession.

With characteristic energy the dentists of the United States spontaneously resolved to effect a change, and in a comparatively short period their influence was powerful enough to have laws adopted in nearly every State in the Union. This was rapidly followed by State Boards of Examiners, and subsequently was formed the National Association of Examiners, a delegated body deriving its power from the several State Boards. Having passed through this period of organization we are about to enter a new phase of this movement, which will require the best wisdom to carry to a successful issue. Law is a weapon which carries a double edge and may react to the injury of those who use it.

The present condition of the various statutes is very far from satisfactory, and the operation of these laws has, in many instances, worked serious injury to individuals. The reasons for this have been well and ably portrayed by President Foster, and need not be repeated here. If we must have law, let it bear directly upon the wrong committed. Let it press hard, if necessary, upon the individual who has made no effort at culture and mildly on the student who has made every effort to secure the best knowledge attainable. This view, unfortunately, has not prevailed in some of the States; indeed, it would seem as though the uppermost thought was one of sympathy with the one who has made little or no effort, while all the legal force is heavily arrayed against the young man who has devoted years, it may be,—and at great expense and labor,—to master the difficulties of his profession. That this is wrong requires no argument, and is an injustice so palpable that it is surprising that the intelligent members of State organizations should have ever entertained such an imperfect idea of what was needed at that

critical period. It is, however, embodied into law, and State Boards are to-day granting degrees, or what is equivalent to them, while graduates of colleges are required to be re-examined, and in some States are forced to pay a heavy additional fee for the privilege.

The examinations of these boards might not be so serious, indeed would have a certain value, were it not for the fact that these bodies are irresponsible. The profession has no guarantee that these men are qualified for the positions to which they have been appointed. The ability to examine is not easily acquired, and it may be a question whether it is not an inherited talent and does not belong to every one. Whether this be true or not, it needs a large degree of experience to carry it forward successfully. If the present form of State Examining Boards is to remain as part of the educational work, then a National Body composed of distinguished specialists should be selected to examine the men proposed for these responsible positions. When this is done there will be some degree of confidence in the result.

The subject is too extended in its ramifications to be commented on here with the fulness required. It needs time and space commensurate with its importance, which are not at our command in this issue of the JOURNAL.

The American people should ever be alert and jealous of any infringement of their individual rights. Law is of slow growth, but is proportionately insidious, and will, in time, destroy the best organized republic if allowed to have undisputed sway. The people of the Old World are supposed to be suffering from the tyranny of despotic power. While this may be true in a limited degree, they are more the victims of laws and customs, the growth of centuries. It has, therefore, been the opinion of many of those best informed that a republic could exist only in name in what is known as European governments. The overturning of a throne means, therefore, if this view be correct, no change in the direct controlling force used to influence these oppressed peoples, for the simple reason that the laws have become part of their very existence, and the fall of dynasties can have no effect upon them. Should we not, then, approach all attempts at formulating law with this query: Is this for the good of the public? If so, work for its adoption. If, on the other hand, it means oppression and selfish exclusion of others from the special work we are engaged in, would it not be well to hesitate and refuse to have part or lot in manacled the profession?

TEMPORARY ENLARGEMENT.

WE have found it necessary to increase this number sixteen pages, or one form. The enlargement will be confined to this issue, and has been rendered necessary by the accumulation of much valuable material. It is to be hoped that our contributors will appreciate this as an evidence of the desire of the management to present their articles at as early a date as possible.

Domestic Correspondence.

TO THE EDITOR :

DEAR SIR,—As the readers of your journal have been informed of an "incident," said to have taken place at a meeting of the New York Odontological Society, in March, I find in looking it over that it is misrepresented. I cannot forego the opportunity of correcting it, for I am the person, "not a member," that related the case.

Matthew Arnold says, "He who assumes to criticise must at the time rise superior to the one he aims to criticise." When I am done with this I will leave the reader to decide who is criticised. I consider the whole statement of the writer simply one of special pleading. If the presentment had been made in the spirit I gave it, the impression would not have been so misleading. Much that I did say was left out, which would have contradicted what the writer said. Much that is given I did not say.

I prefaced my remarks by stating that I well knew the difficulty of relating such an incident, so as not to give a wrong impression, and avoid the suspicion of a personality. I presented it for the purpose, I said, of emphasizing the criticisms given by Dr. Shepard in his late paper, which were directed to the importance of a change for the better in the management of our College Infirmaries. I am too much in love with the best interests of our calling, and feel too kindly towards men that have done so much unthanked service in our schools, to think of injuring them in any way. I am not a superficial observer of what constitutes an intelligent care of the mouth as viewed from the advanced standard of to-day. I simply stated that this patient was an intelligent person; and had confided in a practitioner for many years the full care of her case, and that he was a much reputed teacher in one of our leading dental colleges.

I did not criticise the mechanical part of his service as exhibited by fillings, but did the unhealthy condition of the mouth, finding as I did so many dead pulps—and offensive ones, as they proved—and the advanced stage of the distressing disorder, "Riggs's disease," and, as the patient said, having never had her attention called to the fact. One of her molars was so loose I took it away with my fingers, and found the palatal root absorbed, and as sharp as a needle point, causing agonizing pains at the base of the brain. On the opposite side two molars were very loose, and with mal-occlusion and sorely painful.

I think I have said enough, and I will put it beside the article referred to, and let intelligence give the verdict.

The question is raised by the writer regarding the fairness of reporting such cases. As we are not yet a liberal profession, as shown in many quarters, and as we have much crude material to deal with, I think a little friction on a dry surface will serve as a counter-irritant and induce a better resolution, which will bring things ultimately into healthier conditions. Of course, this must be mixed with a good deal of fraternal spirit, certainly more than is evidenced by "X." The multitude of adjectives that "X" injected, such as "prominent," were not used by me. If "X" had, while he was about it, with so much solicitude for courtesy, continued his correspondence of a domestic character, and given another incident that occurred at the same meeting, by a member, he would have improved his article.

G. A. MILLS.

NEW YORK, May 9, 1890.

[The foregoing is admitted at the special request of Dr. Mills, who felt aggrieved at the allusions of "X" in "Domestic Correspondence."—ED.]

POST-GRADUATE DENTAL ASSOCIATION.

THE annual meeting of the Post-Graduate Dental Association of the United States was held at Chicago, June 25, 1890, and the following gentlemen were elected officers: President, George H. Cushing, M.D., D.D.S., Chicago, Ill.; Vice-President, Dr. R. H. Cool, Oakland, Cal.; Secretary and Treasurer, Lewis S. Tenney, D.D.S., Chicago, Ill.

Executive Committee.—R. B. Tuller, D.D.S., Chicago, Ill.; Dr. J. M. Gallehugh, Chenoa, Ill.; Dr. G. W. Milton, Silvertown, Col.

This association is but a year old, but it starts out with good prospects of becoming a large and popular national organization, and has a grand work before it. Its object, aside from the same general one of most dental societies, is to particularly encourage and stimulate post-graduate studies and the establishment of facilities for the same in dental colleges. It also contemplates, when its membership will admit of it, establishing a systematic course of home study with benefits not unlike the Chautauqua Literary Society, perhaps, but the plan is not yet sufficiently developed to admit of outlining at this time.

While the name "Post-Graduate" would imply an association of graduates only, the broad view is adopted of extending the work among all legal practitioners who may desire to join and co-operate; but practitioners not graduates are not eligible to membership until they have passed a post-graduate or practitioner's course in some reputable and recognized dental college.

Members of the profession who desire to become members of the Post-Graduate Association should correspond with the Secretary, Dr. Lewis S. Tenney, 96 State Street, Chicago. The membership fee is \$1. Annual dues, payable in advance, \$1. Certificates of membership are issued when the member duly qualifies. Membership may be obtained through correspondence when evidence of eligibility is presented.

TO THE EDITOR:

The following are the names of the officers of the Minnesota State Dental Association, held July 9-11, 1890: President, M. G. Jenison, Minneapolis; Vice-Presidents, W. C. Merrill, Albert Lea; Secretary, L. D. Leonard, Minneapolis; Treasurer, H. M. Reid, Minneapolis; Chairman Executive Committee, E. F. Clark, Minneapolis (elected); Master Clinics, C. A. Van Duzee, St. Paul (appointed by President J. M. Welch, St. Paul); E. K. Clements, Fari-bault; T. E. Weeks, Minneapolis; Membership Committee, F. H. Brimmer, Minneapolis; L. W. Lyon, J. H. Martindale, L. C. Davenport, M. R. Metcalf.

Yours,

L. D. LEONARD, *Secretary.*

Obituary.

WILLIAM A. BRONSON, M.D., M.D.S.

DR. BRONSON died at his home, No. 8 East Thirty-fourth Street, New York, on the 20th of August. He was born in Connecticut, June 4, 1817; graduated at Yale in 1840, and commenced the practice of dentistry in 1845.

Dr. Bronson was one of the best esteemed members of his specialty. Honest in every purpose and of unquestioned integrity; faithful in every work; modest and gentle in manner; generous even to a fault; a true friend worthy of the highest confidence, and possessing a most genial and kindly disposition. He was respected and loved by all who knew him, and many will miss his charming companionship and sincerely mourn his departure.

Dr. Bronson was one of the early members of the New York Odontological Society, connecting himself with that body soon after its organization, and taking a most active part in all its proceedings. For two years he held the office of president, and for many years was a member of the Executive Committee. He was one of the founders of the First District Society of New York, and one of the original members of the New York State Dental Society; and in these also he took great interest.

Dr. Bronson was a skilled operator and possessed remarkably good judgment in matters relating to his specialty. He was frequently consulted in cases difficult to diagnose or successfully treat, and his professional friends found in him a ready helper and good counsellor. He was a fluent writer. His contributions to the journals and essays read at society meetings were always interesting and instructive. Dr. Bronson was one of nature's noblemen. He was an honor to his profession, and his life was an example well worthy of imitation.

C. E. F.

Current News.

THE MISSOURI STATE DENTAL ASSOCIATION.—The twenty-fifth annual meeting of this Association was held at Pertle Springs, Warrensburg, Mo., July 9, 10, 11, 12, 1889, and the following officers were elected for the ensuing year: President, Dr. Henry Fisher, St. Louis; first Vice-President, Dr. J. D. Patterson, Kansas City; Second Vice-President, Dr. J. P. Gray, Sedalia; Recording Secretary, Dr. John G. Harper, St. Louis; Corresponding Secretary, Dr. William Conrad, St. Louis; Treasurer, Dr. James A. Price, Weston, Executive Committee, Dr. J. F. McWilliams, Mexico; Dr. W. L. Reed, Mexico; Dr. W. H. Buckley, Liberty. Board of Censors, Dr. L. M. Nicholson, Fayette; Dr. J. W. Whipple, St. Louis; Dr. J. G. Hollingsworth, Platte City. Committee on Ethics, Dr. N. H. Gaines, Independence; Dr. I. D. Pierce, Kansas City; Dr. C. V. Huff, Knob Noster. Publication Committee, Dr. H. S. Lowry, Kansas City; Dr. W. E. Tuckey, Butler; Dr. E. W. Stevens, Cameron. Law, Dr. James A. Price, Weston. Supervision of Clinics, Dr. D. J. McMillen, Kansas City.

The next meeting will be held at Pertle Springs, Warrensburg Mo., the first Tuesday following July 4, 1890.

WM. CONRAD,
Corresponding Secretary.

321 N. GRAND AVENUE, ST. LOUIS, MO.

GRAND UNION MEETING.

THERE will be a grand union meeting held in Boston, October 28 to 31, inclusive, participated in by the following dental societies under the auspices of the New England Dental Society. The several State societies of the New England States,—The American Academy of Dental Science, Connecticut Valley Dental Society, Harvard Odontological Society, Harvard Dental Alumni Association, Boston Dental College Alumni Association, Boston Society for

Dental Improvement, and the Worcester Dental Society. The committees are arranging for a very enthusiastic meeting. A cordial invitation is extended to all reputable members of the profession to attend.

EDGAR O. KINSMAN, D.D.S.,
Secretary N. E. D. S.

15 BRATTLE SQUARE, CAMBRIDGE, MASS.

At the twenty-sixth annual meeting of the Connecticut State Dental Association, held at Hartford, May 20, the following were chosen officers for the ensuing year: President, Civilion Fones, of Bridgeport; Vice-President, E. S. Gaylord, New Haven; Secretary, George L. Parmele, Hartford; Treasurer, Joseph H. Smith, New Haven; Executive Committee, James McManus, Hartford; William H. Rider, Danbury; C. C. Barker, Meriden.

THE Twenty-third Annual Meeting of the American Academy of Dental Science will be held in Boston, on Wednesday, November 12, 1890.

The annual address will be delivered by W. W. H. Thackston, M.D., D.D.S., of Farmville, Virginia.

EDWARD N. HARRIS, D.D.S.,
Corresponding Secretary.

2 PARK SQUARE, BOSTON, MASS.

THERE will be a Union Convention of the Fifth, Sixth, Seventh, and Eighth District Dental Societies in Rochester, N. Y., on the 28th, 29th, and 30th of October.

W. F. ARNOLD,
Recording Secretary.

DR. E. F. ADAIR, having been consulted about an apparent outgrowth from a left superior canine, dissected away the gum and extracted the tooth, finding attached to it a perfectly formed tooth having a crown with enamel and dentine, and cement on the root; there was also a second similar growth, but much smaller.

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Original Communications.¹

MATRIX OR RING FILLINGS.²

BY DR. L. C. BRYAN, BASEL, SWITZERLAND.

ONE of the most important contributions to practical dental art literature is the article read by Dr. Dwight M. Clapp before the New York Odontological Society, and published in the *Dental Cosmos* of December, 1888, on combination fillings of gold and amalgam finished at one sitting. The clear and exhaustive manner in which Dr. Clapp presents his arguments in favor of combining gold and amalgam in large compound cavities in the molars cannot fail to convince thoughtful members of the profession that there is much of value in his suggestions. A subject of such universal importance, covering cases that are daily presented in the practice of every dentist, should receive something more than a passing notice. The subject should be more thoroughly discussed and greater attention be called to the importance of the method.

The matrix suggested by the doctor is novel and ingenious, and adds another to the long list of recent inventions in this department. However, all of these half matrices require more or less

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read at the monthly meeting of the New York Odontological Society, June 17, 1890.

skill in their adjustment, and, considering the large variety of cases requiring the use of matrices, none have proved universally applicable. The ideal matrix should be as simple of application as a ring to one's finger, and all those which require screws, wrenches, threads, and clamps are unsatisfactory in that the general practitioner finds the skill and time required, and the difficulty of adjustment greater than the benefit resulting from their use. The ideal matrix then should consist of a simple ring, so thin as to pass readily between the most crowded teeth without disturbing their position but slightly, and without bending upon itself in its adjustment. It should be exceedingly flexible and springy, so that it may be bent into any position and return to its original form on the removal of pressure. It should not stretch or belly out when force is applied to it. It should be ready-made and at hand; of proper width and height, without necessity of adjusting; it should be possible to place it on a broken-down tooth of any degree of dilapidation, with or without remaining enamel walls. It should be easily removed after the completion without disturbing the contour of a half hardened amalgam filling or breaking off its thin corners; and when removed, it should leave this contoured filling directly and firmly in contact with the neighboring tooth, as the teeth are designed by nature. It should be easily made by the dentist or his assistant of inexpensive materials which every one can manipulate. It should not press upon or injure the gum tissues, but, by fitting itself to the tooth-walls, slip easily below the cavity margin.

If there is a matrix on the market which will fulfil all these requirements it has escaped my notice, and I have been on the lookout for such a one until recently. No material but steel fills all the requirements of a matrix, and I am at a loss to know why steel of a proper quality has not been furnished. I have found the steel used by clock-makers for the support of pendulums, when of proper gauge, to possess the desired qualities.

This steel is manufactured and sold wholesale by Jules Japy, Beaucourt, Doubs, France; but no doubt the same quality can be had at any jewellers' supply-store in America. I can only recommend exactly the gauge mentioned, six-one-hundredths millimetre, equal to twenty-three-ten-thousandths inch. A mandrel similar to that on which jewellers measure rings, but smaller, measuring fifteen millimetres in circumference at the point and forty millimetres at its larger end, divided by twenty-five lines, one-half a centimetre apart, and stamped on each line with the number corre-

sponding to its circumference at that point, is a necessity where one desires to keep a set of matrices systematically and at hand for immediate use.

The writer has used the following method for several years, and has given several clinics with it, one of which in August, 1888, is described in the *Revue et Archives Suisses D'Odontologie*, 3ème Année, No. I.

Hood & Reynolds, of Boston, and Ash & Sons, London, make for me hard-rolled, soft gold "C" and "D" cylinders, after pattern furnished; these I use to form two-thirds of *all* gold fillings in matrices, with or without amalgam foundations. When they are used for crown fillings, they are placed upright, filling the cavity loosely, and cohesive gold is driven into the upper ends, and finished as a cohesive gold filling. The advantage is the rapid manner in which large cavities may be filled, the regular strata of gold giving great strength to the fillings. With an amalgam base in approximal cavities, the least possible retention suffices. The thin ring matrix leaves the contoured and smooth surface resting firmly on the approximal tooth, and the necessary finishing is reduced to a minimum.

The very large heavy "D" cylinders of Hood & Reynolds may also be flattened and stood edgewise on the fresh amalgam base, packed tightly, one lying flat against the other, one end resting against the matrix ring, and the other extending to the back of the cavity, and cohesive gold wedged in between these layers and built up and contoured.

The combination of gold and amalgam is probably as old as the history of amalgam, and no one claims originality in its employment. For many years we have seen occasional mention of the good results of the combination, especially the repairing of gold fillings with amalgam, and the recent agitation in its favor is owing to the fact that so few have adopted it as a regular practice. Dr. Terry, of San Remo, fills the base of deep approximal cavities with amalgam above the gum margin, and at a later sitting drills retaining points in the hardened amalgam and continues the filling as usual, with cohesive gold.

Mr. Gabriel, in the September, 1889, *Dental Record*, of London, gives in detail a method which he has used for several years. He fills the base of the deep-seated approximal molar cavity with soft copper amalgam, level with the gum margin, without matrix or rubber dam,—being assured that the retention is sufficient to hold the base quite independently of the gold to be subsequently added.

A small groove is made in the soft amalgam with a burnisher, from the buccal to the lingual side. The next day the hardened amalgam is trimmed and polished, the dam is applied, cavity dried, upper surface of filling scratched bright, and soft copper amalgam rubbed into the groove, and all that can be wiped away is removed. The groove now serves as a retaining point for the superstructure of gold.

The writer always prefers to use a small portion of amalgam, rubbed into the uneven surfaces of a cavity which is to be filled with soft and cohesive gold; where the artistic effect will not be marred by the exposure of the amalgam, which always becomes very dark, no matter what amalgam is used. This gives a most rigid base, and seems to anchor the gold in the most solid manner possible, and is especially useful when the retention is slight. A very slight bit of amalgam will amalgamate the base of a soft gold filling and adapt it perfectly to the floor of the cavity, and has no objectionable qualities when out of sight.

WHAT IS THE 'ESSENTIAL BASIS OF PROFESSIONAL ETHICS, AND THE PROPER RELATION OF TRADE?'

BY J. MORGAN HOWE, M.D., M.D.S.

"If we define altruism as being all action, which in the normal course of things benefits others instead of benefiting self, then from the dawn of life altruism has been no less essential than egoism."

In the agitation of moral questions, which has progressed for some time, the arguments of those who would raise the standard of ethical requirements the highest are opposed by what their authors probably regard as practical considerations.

The urgency and justice of mutual professional obligations has been offset by the demands of egoism, which in the struggle for existence and preferment cannot be ignored.

It cannot be denied that a desire for adequate remuneration is as fit to be entertained by a professional man as by a man of business, nor, on the other hand, can the proposition be successfully

¹ Read before the New York Odontological Society, June 17, 1890.

refuted that many of the devices for gain, which trade employs without reproach, are unbecoming and intolerable when resorted to by members of a profession.

What, then, is the ethical basis on which the details of professional conduct may rest? Men are discussing questions of professional conduct, one side demanding altruism, and the other replying as if there was no reasonableness in the demand.

To raise a standard of professional morals, which requires the highest nobility and unselfishness, does seem inconsistent with the facts presented, that professional men are not necessarily devoid of selfishness, must have the means to live, and not unfrequently desire and obtain the luxuries of life. What, then, is it to be professional, and what are the limitations of the demands of professional ethics?

Whether dentistry is regarded by all who practise it as a specialty of medicine or not, its professional status can only be maintained by such conduct as that or other professions would approve. While dentistry has been making such rapid progress in certain ways, its material prosperity seems to be a hinderance to its moral development, and the battles of thirty years ago are renewed. At that time some of the most advanced thinkers were just beginning to express congratulations on the progress of professional liberality, as shown in the freedom with which information was imparted to professional associates, and congratulations are still often heard at public meetings and clinics that we have still further advanced in making knowledge free.

It seems to be recognized that it was the business or trade spirit which formerly dominated, when dentists would not reveal their methods of practice, nor admit their associates to their offices or laboratories, for fear they would copy their instruments or methods; and that the change that has been wrought has been through the growth of a professional spirit among dentists.

This has stimulated interest in the progressive development of dentistry as a scientific and useful department of the healing art.

It has caused men to make known to their *confrères* what they have found to be an advance on previous methods of practice. Through the influence of professional spirit men have freely given to their associates what they might have withheld for their own exclusive benefit.

Some recipients of information thus given may be in the same town, and competing for the same patronage, as he who makes the

discovery or improves on the old method; but altruism prevails over selfishness, so that ideas, methods, and contrivances are made public for the benefit of the brother worker, that he may do better for his patient and for himself. Such actions are clearly opposed to all our ideas of *business*, for if the latter prevailed, such proceedings would not be entertained.

It is the business idea that prompts when one has discovered some specially valuable idea, or devised some contrivance that he regards as valuable, and proceeds to *protect his rights* in his method or invention; he is governed by business instincts in reserving it for his own benefit by a patent, instead of by the method of *secrecy*, and it is manifest that the trade spirit has again triumphed over interest in the general welfare.

The measure of business influence over individuals varies, and we see some claiming their rights in a sand-paper disk or a matrix, while others would have restrained their trade instincts perhaps till claims of greater magnitude presented. But whatever the point at which it is decided that an idea or device is worth too much to bestow freely to the common fund for the common good, business triumphs then and there over the interest all professional men should take in helping their *confrères*.

Without in the least disparaging business principles or the devices of trade, by which men seek advantage over business competitors, general admiration of the fraternal spirit manifested in professional actions is evident. This is clearly shown in the contentions of those patentees who are loath to have any of their actions regarded as unprofessional. Although they have a perfect right to what is their own, to give, to withhold, or to sell for lucre, if they choose either of the latter, they surely have no cause of complaint if their associates fail to concede to them the honor of being controlled by a professional spirit in those things, the monopoly of which they choose to retain for their own advantage, or sell to manufacturers who do the same; whether these mercenary advantages are sought to be maintained by means of secrecy or by the aid of patent laws.

The better element in all so fully recognizes the justice and nobility of professional sentiment, on the part of a body whose every member is debtor to the accumulated industry, talent, and experience of the past, that men whose pockets jingle with the coin of trade, in articles or ideas of supposed value to their associates, have their vision obscured in the conflict between their nobler and more sordid tendencies.

They argue and contend and apparently befog the question of their right, both to the aforesaid *pelf* and to the *honor* of denying themselves the advantage of its possession.

Neither true professional feeling nor ethics requires professional men to abrogate their desire for full remuneration for faithful services to their patrons. And those are mistaken interpretations which so construe what has been written by those who have advocated high professional standards.

The highest qualifications in any vocation are worthy of adequate remuneration, and he serves his profession as well as benefits himself who, by the application of the highest skill and integrity, gets such appreciation of his abilities as enables him to demand large fees; for he thereby enables his *confrères* also to obtain better remuneration, and leaves more for those to do who are willing to accept less.

Repression of charlatanry and fraud practised on the public has always been aimed at by professional men, but the essence of professional spirit is to be found in fraternal relations established and maintained among members of the same calling. This implies a minimizing of business instincts and methods in all the mutual relations of professional intercourse. This seems to have been recognized in all codes of ethics.

The interdiction of public advertising—which is so compatible with trade methods—and provisions against one member of a profession in his intercourse with the patient of another, making suggestions calculated to weaken confidence in his associate, have evidently been adopted, because it was recognized by the framers of such codes that unless solidarity was cultivated among members of a profession, a professional status could not be maintained.

It is for the maintenance and extension of this idea of a community of interest in the knowledge and experience of the whole body that colleges, societies, and professional literature must exist, or they have no good reason for being; and the general progress of any profession, as such, will necessarily be measured by the freedom with which all the knowledge and means to improved practice can be acquired by those members having the least resources; just as communities and nations are elevated in the scale of civilization in proportion as the least educated and poorest of the people, are lifted up morally and materially.

The progress of a profession, as well as a nation, is to be measured not by the condition of the highest but of the lowest classes.

If this be not true, why should we not go back to the practices of the days of professional infancy, when those most competent in any particular kept their secrets or sold them for money?

Why should societies, such as this, hold meetings where incidents, appliances, methods, and principles are presented and discussed for the common good of those present, and afterwards are published for a larger audience to read and appropriate, unless dentistry is to progress thereby, not alone in its front ranks, but also among its least advantaged practitioners? What reason is there for the free dissemination of such knowledge that does not apply to every proprietary secret or patented contrivance?

Those who freely contribute—without thought of return—according to their ability for the general good are nevertheless not without their reward,—the stimulation and development of their own powers, the consciousness of doing their part, and the appreciation and esteem of their associates. In other professions, men who become recognized as having special ability are called in counsel and obtain special fees; in dentistry this is less common, mainly, it would seem, because there is less general assurance of mutual professional feeling and more suspicion of trade spirit. Those who contend for their right to money remuneration for their inventions seem to help produce such an impression. It is a business right which has no place in the mutual relation of professional associates. They may obtain the reward they seek, but they have sold their birth-right. These gentlemen have allied themselves with manufacturers and dealers in supplies, and ought not to seek both the profits and emoluments of the latter, as well as the favor of professional recognition.

The business of making and selling goods for the use of professional men is an honorable one, but certain business principles and methods prevail that separate it widely from a profession, and make its interests dissimilar, and in some respects antagonistic to the profession to which it caters.

Dental manufacturers and dealers and those dentists who sell them their patents, or secret formulæ, have used the argument that the prospect of money recompense is the only incentive that can be relied on to insure progress. Their interests in their own benefits, arising from the cultivation of this sentiment, make them overlook the fact that the best and most valuable work in the world has always been done without regard to recompense; although the result of such work has often been appropriated by others, or turned to their practical use. Dwinelle devised and suggested

our use of the screw, and Jack gave us the matrix, but others for slight modifications of these ideas sought pecuniary reward by patents.

Dr. Stevens, an eminent oculist, has, within a short time, given his professional associates the phorometer, an instrument which represents more originality than any patented thing now used by dentists; and his failure to patent illustrates the professional idea as opposed to trade principles. Possibly some optician might be glad to have the monopoly of its manufacture, and pay well for the privilege; but hardly an oculist could be found to admit that such an arrangement would tend to professional progress. On the contrary, progress in a professional sense is checked by patents to the extent that the ideas or inventions are covered by the law; improvements are either prevented as infringements, or else are smothered by those interested in the original patent.

It is against the interests of manufacturers to let improvements get on the market. The refusal or failure of the Bell Telephone Company to improve the instruments used by the public has recently been discussed in the public press, and the *New York World* comments thus: "The question naturally is, Why is not the public given the benefit of these improvements? The answer is perfectly plain, Because it would cost the monopoly something to supply new instruments. It is cheaper for the original patentees to buy up and pigeon-hole all outside improvements, or to refuse a license for their use, than to accommodate the public;" and adds that it is not easy to suggest a practical remedy for this state of affairs.

Professional wants in the line of improvement are antagonistic to the same commercial factors which elect that the public shall have just as much—and no more—as manufacturers and patent owners can make the most out of, and instances are not wanting in which dental manufacturers have bought patents for appliances calculated to supersede those made by them, for the purpose of preventing their appearance in the market.

Such like business expedients, although quite compatible with ordinary trade methods, are entirely at variance with the ethics of a profession, and clearly illustrate a distinct and radical difference between business and professional ethics.

Professional men recognize privileges and duties in their relations to their *confrères* which are not in the line of business, but are distinctly altruistic, and the history of dentistry, as a profession, shows that the beginning of such recognition of the mutual relation of its practitioners was the beginning of professional development.

The dentist of the olden time, who cherished his secret, had the same reasons for doing so that the patentee to day has for asserting his rights in his invention or method, and both exert inhibitory influence on professional growth.

These considerations suggest the question, whether abnegation of self interest, in response to the sentiment of solidarity, is not the basis of professional ethics? Without such feeling a body of men would not be professional, no matter what the sphere of their work.

It seems to be entirely due to such sentiment that men begin to take interest in raising educational standards, disseminating knowledge, and generally interesting themselves in helping their *confrères* to do more and better work. Without such feeling we return to secrecy and isolation.

If these are fair and true statements, is there a point at which professional men can consistently withhold what they have acquired from their brother? No, there is no such point.

Complete solidarity in matters of common interest is the essential basis of professional ethics, and with this generally admitted and practised, all other ethical questions would be subsidiary. This draws a distinct line between the professional status and trade. Manufacturers and business-men keep their factory- and office-doors closed against their competitors, instead of seeking to benefit and enlighten those in the same business. When they combine for mutual advantage, it is not to help the weak, nor to disseminate information that might help others to do better, but to exclude from the advantage of combination those who are powerless to compel admission, or are unwilling to submit to business dictation; to accomplish by uniting what they cannot do separately, in the direction of monopoly.

Many dental manufacturers claim a certain sort of professional standing because they have been dental practitioners, or hold diplomas. They attend society meetings and clinics to show their wares in a quasi-professional way, and not infrequently read papers and perform clinics with more or less business suggestions. These conditions have met with but little open opposition, perhaps because to some the trade atmosphere thus introduced was not unpleasant, and partly through unwillingness to incur the disfavor of the business interests represented, the latter being jealous of their opportunities and aggressive in maintaining their influence.

It is an open secret that some prominent men have been the recipients of benefits—more or less direct and material—from

dealers and manufacturers, and that the sentiment of professional circles in which these men move seem to be affected concurrently. A large number of the manufacturers own and publish journals which contain the writings of dentists and current society reports, and are the special medium of advertising of the house owning them. A periodical literature of dentistry has in this way been largely monopolized by the dental trade, dentists themselves furnishing the means. The most obvious expression of dissatisfaction with existing conditions has been made, in various efforts, during the past ten years, to establish journals of professional literature that should not be under the control of manufacturing firms; and more recently in individual utterances of disapproval. As a result of the latter, the men who have been sufficiently interested in the professional status of dentistry to call attention to the insidious influence and control which is exerted by manufacturers and dealers have their motives impugned and themselves maligned by those who think their material interest jeopardized; but tradesmen, as well as professional associates, must recognize the fact that self-interest would not prompt men to write against these abuses, as Drs. Meriam, Jack, and Smith have done. Nothing but a sense of need, and willingness to perform a duty, could have induced their action. The thanks of their associates have been meagrely expressed, while some have not been reticent in pointing out what they considered flaws in the indictment. But appreciation has not been absent, though unexpressed, and the attitude of the journals owned by business-houses has demonstrated the need of independence in journalism, as well as in other relations.

Those are erroneous ideas of professional progress that favor a commercial atmosphere, or that would obtain an advantage at the price of placing professional men or organizations under obligations to those seeking patronage. It is, for instance, commonly reported that some dental colleges are the regular recipients of gratuities of all the artificial teeth they use in their infirmaries, and that the students are recommended to make their purchases of the firm making such gifts.

The relations of societies to manufacturing concerns are also often of a nature to compromise professional dignity. In New York, one of the societies accepted for years the free use of a dental depot for its regular meetings, and also for its monthly clinics. This may seem to have a justification in the saving of expense to members, but the anomalous nature of such arrangements would appear to have been recognized when, some time ago, after some quiet

agitation, the society decided to change its place of meeting, relinquishing this much of the bounty; but the free use of the sales-room has been retained till the present time for the regular clinics. These clinics have undoubtedly been productive of much benefit. Their interesting character and efficiency was for years largely due to the untiring labors of Dr. C. F. W. Bödecker, chairman of the Clinic Committee. Some three years ago, on his withdrawing from active interest in the society, the writer asked him the reason for such action, and was informed that one of the reasons was that his course in sometimes introducing at the clinics appliances and devices other than those made by their host, which he considered of interest, met with objection and remonstrance from those in charge of the depot. The statement is made that the invitations and programmes are printed gratis by the business-house, and material for the operators furnished without cost. To these it may be added that the same society has accepted, on several occasions, donations of considerable sums from the same business concern, to help defray the expenses of special large meetings, and on at least one of the special occasions the same business-house was given the sole right to make an exhibit of goods in the place of meeting. One of the Brooklyn societies has also been under some obligations to a dental supply house for use of rooms, I am informed. How many organizations throughout the country may have business arrangements of a like character for professional advancement is not at present known? These are cited merely as illustrations, and if there is anything stated amiss the writer will be glad to be corrected. But the question is raised whether these things tend to professional growth, or whether all that may be gained is not more than counterbalanced by loss in other ways? When the State of Louisiana would have been benefited by larger supplies of money to defray the expense of repairing the levees against the rising floods, Governor Nichols thought the advantage would be gained at too great a cost if the people of the State were placed under obligations to the Louisiana Lottery Company, and therefore returned their check for one hundred thousand dollars, which was tendered as a gift.

The business interest in obstructing improvements under certain conditions, and restricting freedom of information, is shown also in the present condition of manufacture and sale of proprietary and secret compounds. The progress of dentistry demands that its practitioners should know exactly what they are using, whereas the extensive advertisement and sale of proprietary medicaments,

cements, and alloys shows that the majority must have only a very vague idea of the formulæ of such compounds. It is for the apparent interest of the trade that these things should be so, and dentistry has developed so rapidly, and is yet so young, that it could not be expected that abuses would not also grow up.

But it is quite evident that the time has arrived when such conditions are recognized as opposed to scientific progress, and, being seen, should be corrected by the determination of individuals to use only those compounds whose formulæ are made public.

Sir Joseph Lister, in a recent address before the Medical Society of London on "A New Antiseptic Dressing," took occasion to compliment and thank those firms of manufacturing chemists and pharmacists who aided him in his chemical researches, and assisted him by supplying the needed material. It is to be observed, in the report of his address, that the chemists freely informed him of their methods and the result of their experiments, without reserve or secrecy. It may well be doubted whether this eminent surgeon or any other self-respecting physician would have felt called upon to thank manufacturers or commend their products if the formula of the dressing had been a secret. It is safe to say that a secret preparation would not have been used, much less made the topic of an address. Pharmacists are publishing the formulæ of their preparations as an inducement to physicians to favor their use, and there are similar reasons why dentists should require the same inducements. Dental pharmacy ought to be a subject of scientific study and practical experiment and comparison, instead of being left in hands as secret and mysterious as the alchemists of old.

Manufacturers have all these years been trading on the assumed ignorance or indifference of dentists, as is shown in the method of advertising their compounds under proprietary names, with more or less impossible virtues. Alloys are presented as "rich in precious metals," or as containing gold and platinum, in deference to supposed benefits, or as an excuse for high prices, but other elements in their proportions kept secret, just as quack nostrums are advertised to the public.

Considerable attention has been given to the question of the relative value of ingredients of cements and alloys by individual dentists, but there is every reason for believing much progress may yet be made, and nothing would tend more to improvement than a general and familiar knowledge of just what is used, and comparison of results. Such topics are as legitimate and necessary subjects for society discussions as any others.

Original Communications.

Manufacturers are not necessarily to be condemned for pursuing a business policy in regard to matters left in their hands by our own indifference and preoccupation. We need only to recognize what is needed for the advance of scientific and professional interest, and be governed thereby. But we are confronted by the fact that dental purveyors claim a professional standing as dentists, own journals, and resent restriction of their claims, and even the discussion of these subjects.

If the conclusion that community of interest in matters of common professional concern is the essential basis of professional ethics, manufacturers and dealers in dental goods surely have no claim to such recognition. But it is unnecessary that our interpretation of ethics should furnish the ground for denial of such a claim, the general attitude of the majority of manufacturers, shows plainly a very different sort of interest in dentistry from that of its practitioners, as does also the combination they have formed—for their own interest, and we claim against ours—to limit competition and exclude from the facilities of business relations those who are for any reason not of their coterie.

Further justification for refusing to accord professional standing to these so-called "professional business-men" seems unnecessary, but the editor of their leading journal has furnished it, in discussing these very questions. In the same article in which statement is made of the circumstances and honors attending his obtaining the M.D. and D.D.S. degrees, it is also stated that an allegation made in Dr. Jack's "Saratoga paper," "is calculated, if not intended, to damage the business of the company publisher of the *Dental Cosmos*," and he is accordingly *dared* to make his allegations more specific, and in that case, the editor says, he "will give him [Dr. Jack] the opportunity to justify himself . . . in a defence in open court." Nothing, perhaps, could more clearly show the difference that must necessarily exist between the professional and the business instinct, and the incongruity of the claim to professional standing of those engaged in the business of dental supplies, than this threat of a lawsuit against Dr. Jack.

Our relations with the firms and individuals who supply our instruments and materials ought to be entirely amicable, but we cannot be under obligations to them without recognizing a claim—either expressed or implied—to some return. The dental trade should occupy the same relation to dentistry as do the purveyors of supplies to other professions,—namely, caterers to their needs.

If dental manufacturers should progress to professional relations among themselves, it seems quite possible that they would in some ways be benefited. At present their relations both to each other and to their patrons seem to be of a purely business character. With this relation we could find no fault, provided its business character was fully recognized by both sides. Business relations may be none the less friendly because so recognized, and professional relations are not necessarily more friendly, but are essentially different. Progress seems in no small degree to depend on a fuller recognition of what these differences are, and with a desire to stimulate thought and discussion this paper is submitted for your criticism.

GASOLINE BLOW-PIPE.

BY J. J. REED, KANSAS.

WHILE, perhaps, the largest proportion of dentists have facilities for soldering in the use of illuminating gas, there are still many who are compelled to make use of other and inadequate means to accomplish this work. The following description will, doubtless, be of use to this class.

The blow-pipe consists of a quart bottle with a mouth about one inch in diameter, fitted with a rubber-stopper, the latter perforated by two holes, through which pass two glass tubes, one extending nearly to the bottom of the bottle, the other merely passing through the stopper. Two rubber tubes, about four feet long, are attached to the glass tubes. To the end of one of these is inserted two inches of glass tubing to serve as a mouth-piece, and to the other the ordinary mouth blow-pipe. The bottle is half filled with gasoline.

By blowing through the mouth-piece tube, which should be attached to the tube extending to the bottom of the bottle, the air is made to combine with the volatile properties of the gasoline and passes out through the blow-pipe tube and may be ignited by an ordinary alcohol lamp. It produces an intense heat. If it is desired to increase the size of the flame, all that is necessary is to use blow-pipes of varying apertures from one-eighth inch down. Care should be used not to blow in the wrong tube, as this would force the gasoline out of the other tube. A foot blower will be found of advantage.

THE HERBST METHOD OF FILLING WITH GLASS.**BY JAMES A. BRUCE, D.D.S., MELBOURNE, AUSTRALIA.**

HAVING seen an article on Dr. Herbst's glass fillings in one of the dental journals, and regarding it as rather indefinite as to the process, I propose to give a more detailed account. It was my good fortune to spend a short time with Dr. Herbst, so that I feel I can, possibly, make the subject clear to those who may wish to try it.

There must be three or four kinds, or rather colors, of glass,—viz., white, brown, and yellow, with occasionally a little blue,—so as to adapt the filling to the color of the tooth. The best results obtained by Dr. Herbst are produced by using beads, careful to obtain those having very little or no transparency, such as milk-glass. These are ground very fine and mixed according to the color of your tooth. I find the best way is to have a good average color, and for any alteration necessary a small quantity of white, yellow, or brown, as the case may need.

Prepare the cavity in the mouth without any undercuts; but leaving it with nice, sharp edges, the latter being an important part in the success of the filling.

Next, line the cavity with one layer of No. 60 gold foil, pressing it to place with india-rubber or some such material, and finally taking a wax impression (the wax being used hard), the gold being withdrawn in the wax. The result is a sharp impression of the cavity into which plaster and pumice, in proportion of two to one, respectively, is run. After this is thoroughly set, boil out the wax, leaving your model with the gold coating.

Proceed with the glass filling by placing a few grains of sand in the bottom of the cavity (to make the cement adhere firmly) and a little glass mixture, moistened on the top, very little more than enough to hold the sand together. Dry thoroughly, and then make use of a Bunsen burner and mouth blow-pipe, the former being necessary to get rid of the smoke. Heat until a blaze is formed, then allow it to cool off, and then add your second coating, which very nearly fills the cavity, and proceed as before. The third coating is to bring up the glass exactly to the edge of the cavity. It is done in the same way as the others and forms the last layer. This process very much resembles continuous-gum work; but the excessive heat is not needed. When cool, remove the filling from the plaster and gold and it is ready for insertion in the mouth.

Before inserting, however, make slight undercuts in the cavity without altering the outer edge. The gold used gives a very much sharper edge to the glass filling, and altogether seems to fit the cavity better than when doing without it.

The filling is made in a very few moments and can be prepared by an assistant, and in places, such as the labial surfaces, can with practice be made a very good match to the color of the natural tooth and a perfect fit. Perhaps I might add that it is always well to have the filling slightly darker than lighter than the tooth. These fillings when once inserted into cavities with cement are so firm that it is almost impossible to remove them.

Dr. Herbst adds to the above the following suggestions:

"It is somewhat difficult to procure the right kind of beads. They are such as are used for needle-work. There should be one color mixed with three parts of the white and one part of the brown glass ground previously in an agate mortar as fine as possible. First try the color by burning one layer and add a little of the white or brown glass as the filling may require."

Reports of Society Meetings.

AMERICAN DENTAL ASSOCIATION.—THIRTIETH ANNUAL MEETING, EXCELSIOR SPRINGS, MO., AUGUST 5 TO 8, 1890.

(Continued from page 617.)

Second Day's Proceedings.

THE second day's session of the American Dental Association convened at the opera-house at Excelsior Springs, Mo., at 10 A.M., Wednesday, August 6, First Vice-President A. W. Harlan, of Chicago, presiding.

The committee on the S. S. White matter reported that the communication from the company concerning the publication of the reports was substantially correct. The report was adopted.

The committee on voluntary essays reported that the various matters in the president's address had been referred to the different subdivisions. The report was adopted.

Dr. C. N. Peirce, chairman of the Section on Dental Education, Literature, and Nomenclature, then made his report. He stated at the commencement, that there had been a steady growth in the interest taken in matters of education. The number of dental colleges at the time of the last annual report was thirty-one. This number was decreased during the year by the suspension of the dental department of the St. Louis College of Physicians and Surgeons, but increased by the establishment of the dental department of Tennessee Medical College, at Knoxville, Tenn., the Western Dental College, at Kansas City, Mo., and the United States Dental College, at Chicago. The number of dental colleges in active operation at the present time being thirty-three.

At the commencements held¹ since the last meeting of this association, from twenty-nine of these colleges there were graduated nine hundred and sixty-three persons, an increase of one hundred

¹ No report was received from the Northwestern College of Dental Surgery and the National University (2), while the Western Dental College and the Dental Department of the Tennessee Medical College have held no commencement (2). Total 4.

and sixty-seven over the preceding year. The ratio of increase in the number of graduates this year is three times as great as it was last year over the year preceding it.

The total number of graduates during the past years (1886-1890 inclusive) is three thousand six hundred and five.

The rapid multiplication of dental schools in the United States involves a question which is menacing the future prosperity of the dental profession. The results in all probability will be similar to the results attained by the medical schools of this country who turn out annually, to prey on an unsuspecting public, a number of men which largely exceeds the number of graduates in Great Britain, France, Germany, Italy, and Austria combined. This has been carried to such an extent that the medical graduate is the laughing-stock of his transatlantic *confrère*. He now swarms in such numbers in the United States that one out of every six hundred is a medical graduate. At the present rate of progress made by the dental schools of the United States, they will soon equal, in fertility at least, the medical colleges of this country.

While eventually the subject of education will probably be under national control, at the present time some means ought to be adopted whereby the rapid increase of so-called colleges might be checked. Possibly the only remedy at present lies in the amendment of State constitutions, so that at least none but "reputable and capable" men may be able to secure articles of incorporation. In one State the incorporation of dental colleges and infirmaries is almost coequal with the issuance of dog licenses. The section is not prepared to offer any special remedy, but hopes that members of the Association may reflect on the question and be prepared to adopt some means to check the evil before its serious consequences become more marked. To one subject the section would direct attention. There is to-day, in the literary and scientific elements of society, an effort being made to establish a national university at Washington, D. C. As that idea matures, which will probably be in the not-far-distant future, those interested in the progress of dentistry should be on the alert and see that our profession is there represented.

The advantages offered for the establishment of such an institution in the capital of our country are too patent to be overlooked. First, the climate for eight months in the year is hardly surpassed in our borders. It is the home of men of talent,—students of profound and varied ability and of institutions such as the Smithsonian National Museum, Government Surveys and Commissioners,

American Medical Museum, philosophical societies, national geographical, agricultural, and chemical libraries, embracing over one million volumes, and laboratories embracing illustrative material in every department of medicine and surgery.

With anxiety and interest every earnest member of the dental profession is looking to the action of the National Association of Dental College Faculties. The adoption last year by that body of a resolution requiring all schools connected therewith to adopt a three-years' graded course of not less than five months for the session of 1891 and 1892, to be continued thereafter by all such schools, was certainly a forward step, which, it is to be hoped, will be fruitful of much good. That this step shall be maintained, so that the profession may reap the benefit of this united and progressive action, depends largely upon the State Boards of Dental Examiners and the encouragement they receive from the National Board of Examiners. It is an easy matter for schools to obtain representatives in the Association of Dental College Faculties, and advertise in their announcement that their requirements are consistent and in accord with said association, and subsequently in the admission and graduation of students to ignore every vital principle therein involved. The State Examining Boards are the only power capable of correcting this malefeasance, and unless they are willing to exercise this power the resolutions proclaiming this advance in educational institutions are but blots upon their books, and as worthless as a discarded garment. It is well known that a prominent school has so advertised its accord with the Association of Faculties and at the same time has violated the latter's requirements when a few students were to be gained thereby, and yet their diplomas have been endorsed as freely as those from schools where every letter has been conscientiously adhered to.

Since the last meeting of this body three States have so modified their dental law as to require an examination and endorsement of all who propose to practise within their borders or commonwealth without regard to where the graduate's diploma or certificate was acquired. Mississippi, New Jersey, and Minnesota are the States which have recently taken this step, Massachusetts having three years previously inaugurated this advance which your chairman of the section believes to be in the right direction. State Board of Examiners share with the faculties an important responsibility, and such action on their part must prove a great incentive to students to be thorough and well-grounded in principles and practice. Of course, the value of this State Board examination, as

well as its justice, depends upon the qualifications of those conducting it. It is not enough that the members of this Board of Examiners enjoy the emoluments of a large and remunerative practice, or that they be held in good repute by their neighbors, and have the degree of D.D.S. previously obtained from some college. Any one or indeed all of these are not necessarily qualifications for the proper performance of such a function. The qualifications of the State critic or examiner must depend upon judgment. This judgment must be ripened or trained through what may be termed first-hand knowledge, knowledge the result of practical experience and experimentation.

One with a very limited experience may judge of the density and finish of a filling or a piece of prosthetic dentistry, but may be very poorly qualified to criticise the appropriateness of the one or adaptation of the other. An eminent professor has said, "Our knowledge of the universe depends upon our contact with it, and may be expressed in what we call science." So, one's knowledge of dentistry depends not only on his familiarity with the materials used, but also on the knowledge possessed of the tissues or organs upon which the operations are performed. So, just in proportion to the extent of this knowledge gained from contact is the knowledge of the science of dentistry broad or narrow.

If it were only practical skill, or skill in technique, that is required, the student need not go beyond the preceptor's office and laboratory; but fortunately our colleges are instituted for a deeper and broader purpose. The forces of nature, as embraced in biology, chemistry, metallurgy, etc., should be and are taught in our best schools, as much as a matter of necessity in the lecture-room, clinics, and laboratory, as the more simple mechanical processes. The pertinent question now arises: How many of our average practitioners, whose graduation dates back *five, ten, fifteen, or twenty years*, of whom our examining boards are composed, are qualified to judge of more than the superficial qualifications of the student; and how often is injustice done the applicant through their ignorance and inability to open the chambers or recesses of valuable information? The advantage which is to be gained in the prospective three-years' graded course, soon to be adopted by our schools, is the opportunity for additional scientific training which it offers.

Some four years ago, when your chairman of Section Two had the honor to hold the same position, he prepared a paper looking towards a higher standard than the degree of D.D.S. now conferred by the colleges. It was at that time deemed by the section prema-

ture or utopian; but at the present time the same ideas are accepted by the section as worthy of voice, and are as follows:

In view of the fact that a very large proportion of our dental schools are dependent upon the class in attendance for support, and that the compensation to professors and demonstrators has a like sustenance, the temptation is constantly to increase the class beyond capacity for instruction, and to estimate its value by numbers rather than quality. To such an extent has this been true, in the desire to excel by publishing a large graduating class, that a prominent school some two or three years since graduated the same five students two consecutive years. To express the condition of our educational institutions tersely and in a few words, we should say that, under the present organization of a very large majority of our schools, the tendency or temptation is to insufficiency rather than proficiency, to superficiality rather than solidity. Therefore we deem it an imperative necessity for growth and proficiency that there should be established a higher standard than is now required by any of our dental or medico-dental schools, and that this association now in session should before adjournment appoint a committee of five to consider the advisability of establishing a national board, who would be clothed with power to confer a title or degree upon those members of our profession who had attained a well-rounded degree of proficiency by experimental and true scientific work to make them worthy of such distinction. The object or purpose of this action would be towards a broader, a more liberal education in everything that pertains to the profession of dentistry.

At the last annual meeting the following resolution was adopted:

Resolved, That Section II. be instructed to formulate and present at the next meeting of this Association a plan of work for the sections of the Association.

Many of the members of this Association are not satisfied with the method now in vogue of doing the work of the Association, and the resolution was adopted, in all probability, for the purpose of having some means devised whereby the annual labors of the Association may be made more valuable.

An attempt was made by the secretary to secure reports of the meetings of the various State and local societies, to get abstracts of the papers read before them and of the discussions following. The secretary issued the following circular-letter to secretaries of societies:

TO SECRETARIES OF DENTAL SOCIETIES IN THE UNITED STATES:

A plan, under which the work of various sections of the American Dental Association should be done, is being elaborated by the section to which this subject was referred at the last meeting of the Association. The secretaries of the various dental societies are requested to prepare (or have some competent member of the society do so) a brief, concise synopsis of the work of the society. This should include extracts from the papers read and from the discussions following, and should include mention of every item of scientific value brought forward during the meeting of the respective societies, a description of new instruments, appliances, and in fact a mention of *everything* worthy of notice. These reports should be sent as soon as possible after the adjournment of the meeting of the respective societies to the secretary of Section II. A. D. A. (Louis Ottoby, 70 Dearborn Street, Chicago). They will then be separated and sent to the respective chairmen of the various sections. In this way the chairman of each section will receive a report of everything that has been accomplished by the different societies of the United States in the particular branch represented by his section. The sections will then prepare their reports from these State and local reports, and thus present an entire exhibit of the profession's advance and labor during the year. The societies which contribute to the accomplishment of this object will receive due credit in the report of each section.

Please forward at once to the undersigned any papers or essays, or abstracts of them, read during the past year, for the purpose herein mentioned.

Credit will be given your organization for the work done during the year.

Address all communications to

LOUIS OTTOBY,

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The intention was to secure the scientific reports to distribute to the respective sections, in order that they might present whatever they found worthy in their report to this Association. But few replies were received. This led to an inquiry regarding the American Dental Association, and the relation which it bears to the dental societies, and the profession generally.

The investigation disclosed the following facts:

1. That the American Dental Association is not a truly representative body of the profession.
2. That its membership is too small to accomplish what it should.
3. That every dental society ought to be represented by one or more delegates, and that these delegates should bring to it a report of the entire work of their societies during the preceding year, and thus cause the reports of these sections to contain a perfect epitome of the entire scientific doings of the profession in the United States.

In securing a list of members of all dental societies in the United States, we find that there are not less than ninety, nor more than one hundred, dental societies—strictly speaking and excluding

alumni and other kindred organizations—in the United States. Every State, except Montana, Nevada, Oregon, and Washington, has a State society, and nearly all of them one or more local societies. The District of Columbia has two dental societies. Neither of the eight Territories has any dental society.

The approximate aggregate of membership in these ninety odd societies is between three thousand and three thousand five hundred. These societies are classed as national, semi-national, interstate, State, local, county, and city societies. This certainly large membership was represented last year in this Association by only thirty-eight delegates, who represented twenty-two societies which are located in twelve States and the District of Columbia. The dentists of eighteen States and eight Territories were not even represented in the membership of the Association by any one. Three States contribute seventy-five members, while the remaining twenty-three States contribute only one hundred members. It will also be noted that, with the exception of twenty-three who may be credited to the West, two to the Northwest, and fourteen who are from the South, the Association is made up of one hundred and thirty-six dentists from the Eastern States, making it appear more local than national.

This condition ought not to be tolerated. The strength and power of the Association must come from unity. Some means should be adopted whereby the membership of the Association may be increased to at least one thousand. An invitation or an appeal ought to be issued to every society to send delegates to the meetings of this Association, even if it shall be necessary for the local societies to pay fair compensation to their representative. When this can be accomplished, the section would recommend the following method of work to the sections:

Each section should appoint some one of its members, or delegate some one, to attend the meetings of dental societies and make reports of their proceedings, report important clinics, note new appliances and methods, and make a report to their respective sections, or make one entire report, to be divided, and each section to be given those parts relating to its own special work. In addition to these reports, abstracts of papers published in various journals should be made. The sections then ought to sift out the chaff, and present to the Association a summary of everything that has occurred affecting dental science in any way, direct or collateral.

The length of this report makes it impossible to present much

in relation to dental literature. Among the most prominent of works published during the year is a treatise on the irregularities of the teeth and their correction, designed for practitioners and students, by J. N. Farrar, M.D., D.D.S., of New York City. This publication, when complete, will be one of the most remarkable and creditable productions which the present decade has witnessed. It will consist of three volumes,—divided for the convenience of the student into several parts.

The first volume deals with the history and etiology of the subject; the basal principles of regulation; nomenclature; principles of construction of apparatus; retaining devices; laboratory rules for manufacturing devices; application of force; eruption; antagonism; interdental spaces; and the correction of irregularities by grinding and by extraction.

The second volume contains the classification of irregularities and the various methods of their treatment, such as straightening teeth to line, turning and elevating teeth, widening and enlarging the dental arch, and the correction of protruding teeth.

The third volume is largely pictorial, being an object index of all mechanisms described in the other volumes. While in Volume II. the order is governed by the locality and kind of operations, in Volume III. classification is made according to the principles upon which each mechanism is constructed. Those acting by *springs*, or *gradual*, in one class, and those by *screws*, or *positive*, in the other.

The author of this publication has been at an expense of nearly seven thousand dollars (\$7000) in the production of upward of two thousand (2000) engravings.

The first volume will be complete for the purchaser by October 1; the second and third will soon follow, as the material is now all in the hands of the publisher.

There is nothing to report on dental nomenclature save a paper noted from Dr. W. H. Atkinson. The section recognizes that little can be accomplished upon this subject save it is considered by some international organization.

The section presents for your consideration the following papers: "Dental Education, Nomenclature, and Terminology," by W. H. Atkinson, of New York City; "Scientific Instruction in our Colleges," by A. H. Thompson, of Topeka, Kansas; "Dental Education," by C. B. Atkinson, of New York City; "National Dental Education," by B. A. R. Ottolengui, of New York City.

(To be continued.)

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting Tuesday evening, June 17, 1890, in the New York Academy of Medicine, No. 12 West Thirty-first Street. The Vice-President, Dr. C. A. Woodward, in the chair.

INCIDENTS OF OFFICE PRACTICE AND CASUAL COMMUNICATIONS.

Dr. H. C. Meriam.—Mr. President, I think we are all very much interested in the beautiful forms by which Dr. Perry expresses his ideas in instruments, and I wish to call attention to a very easy way of getting new forms. While it may not be new, I do not know that it is in print. It is to have sent from an instrument-maker untempered instruments about the size desired, spoons, chisels, etc. Then with a brass hammer, on a wooden anvil or block, fashion them into any form, and return them to be tempered and polished. They come so soft that they can be bent as desired, and tried into a cavity. The gentlemen will notice that in the side of these blocks or anvils are holes in which to bend the larger sizes. The object of the brass hammer, which is not original with me, is that any curve may be fashioned without scarring the steel. I will pass these around that all may see how very soft they are, as Mr. Schmidt sends them to me. Here are some instruments of my own forms, and some from English forms given in Ash's catalogues. Some of them may be extra size, but I keep at my work-case a very coarse whetstone, on which I can reduce the size of any instrument.

Dr. W. H. Dwinelle.—A young lady presented herself to me about a week ago, with two front teeth very badly discolored, the color corresponding with that of No. 7 of the S. S. White Company's artificial teeth. She wished to have them bleached. Bleaching teeth I have practised many years, and I wrote some articles on the subject in 1848, which were published in the *American Journal of Dental Science*. In this case, as a matter of course, I concluded that the teeth were dead, for they were quite dark; and I, with impunity, opened the pulp-canals. Previously, however, I had armed myself with a few facts in the premises. I learned from her that her age at that time was between eighteen and nineteen, and that the regulating of her teeth began about five years before, which would make a very material difference in this respect; that, provided

the pulps had been destroyed at that early age, I must look for an enlarged foramen and pulp-canal, and also for several other things that would accompany that period of life. To my astonishment I found the last third, or possibly half, of the tooth-pulp alive. But I had gone too far to retrace my steps; the only way of getting out was to go through and complete the operation, so I treated the living tissues with carbolic acid. Filling the opening approaching the pulp with carbolic acid, I approached it with a Swedish broach charged with acid, retreating and progressing farther and farther, destroying the nerve tissues as I advanced, until I reached the foramen. With careful management this operation is not painful. There, as I had anticipated, I found a very large foramen,—the tooth a mere shell, with an opening and canal so exceedingly large as to indicate that nutrition had been suspended at an early period, corresponding to thirteen or fourteen years of age; and in fact, although I found the last third of the pulp in the canal comparatively alive, yet it evidently had suspended its function at that period, five or six years before, and to all appearances it was a thirteen-year-old tooth. Yet it had sufficient energy to inject its red blood, charged with iron as you know, into the tubuli of the tooth, discoloring the fibrillæ in the tubuli.

Now, what are you going to do about it, gentlemen? That is what I came to inquire. I have, in conformity with the best authorities, assumed that one great objection to bleaching teeth has been that the bad color, the yellow or black color, would return; so in preparing the tooth I have cleaned out the pulp-canal to the foramen, and have been very particular to hermetically seal it, and now I am treating it with chloroform, in order to dissolve all the fatty substances within the fibrillæ of the tooth. As I have said, the foramen was unusually large, and I found a great deal of blood congested there; not exactly degenerated blood,—that implies a breaking up and degeneration of the blood-corpuscles. I found myself in a multiplicity of complexities. I am now dissolving the fatty substance of the fibrillæ. I have not gone on to the use of chlorine yet, my idea being to get the fluid into the porous texture of the tooth within the tubuli, and get it into a condition to receive the chlorine. I use chlorine water rather than chlorine gas. There I stand in this case, gentlemen. I do not go forward because it seems best to stand still at present. I have probably had larger experience in bleaching teeth, or an experience extending back farther than any one that I know of; I have not heard of any dentist practising it farther back than 1848; but I would like

your advice. I consider this is a class meeting, and I want every brother to speak. We know there are a great many reagents for removing discoloration. One of the best in my experience is chlorine. It may be used in various forms, as chloride of sodium and chloride of lime. And a very good reagent also is oxalic acid. It is one of the best reagents against iron that I know of. Oxalic acid is one of the best agents known to remove iron- and ink-stains, as we all know. Sulphuric acid is excellent for bleaching, but it should be used with great caution. I ask your advice in the premises.

Vice-President Woodward.—Some of our Executive Committee are now present: I would ask if they have a report to make.

Dr. Bogue.—Mr. President, Dr. Lord, the chairman of the Executive Committee, requested me to make the following report:

"The Executive Committee, to whom was referred Dr. Bödecker's proposition to give five thousand dollars under certain conditions for the establishment of a dental club and library, beg leave to report that they recommend the appointment of a special committee to act with committees which should be named by the District Society and the Brooklyn Society to consider this question and present a proper mode of action."

On motion, the report was received.

Vice-President Woodward.—If there is nothing further to be presented under Incidents of Office Practice, we will listen to a paper by Dr. Bryan, of Basel, Switzerland, entitled, "Matrix or Ring Fillings," to be read by Dr. Bogue.

(For Dr. Bryan's paper see page 661.)

Dr. Bogue.—Mr. President, Dr. Bryan, in a private letter a week or two subsequent to the sending of his paper, called attention to the fact that these matrices which have been passed around the room, can be soldered by the use of a soldering iron, which avoids the possibility of taking the temper out of the steel. The steel is bought in sheets, perhaps an inch wide, and as long as is desired. It is not thicker than very thin paper, and can be cut and shaped with a pair of pocket scissors.

The mandrel spoken of is six or seven inches in length, the lower end not being larger than the reporter's pen-holder, and the upper end being sufficiently large for the largest molar. As has been described in the paper, each half-centimetre is numbered to correspond to the numbers on the little frame which has been passed around. I tried these matrices, at first with indifferent results, but I found a number of cases where they seemed to come

handily in, and soon I found myself using them more and more, and the result has been exceedingly gratifying. Where teeth are largely broken down, this thin polished steel matrix can be slipped into place, the filling inserted, and the matrix removed with ease, leaving the filling as smooth and as accurately adapted as has been described, provided always that pains be taken in the insertion of the filling. Of course one understands that the possibility of overlapping the margins is always present and must be looked out for. I consider that the saving of time and labor to the dentist, and worry to the patient, is sufficient to make the matrix worthy of our attention.

Dr. Howe.—Mr. President, I will state that French cold-rolled steel, as thin or thinner than the steel of which these matrices are made, can be obtained from Frasse & Co., of No. 92 Park Row, and at other jewellers' supply-stores. When used in a similar manner to that recommended by Dr. Bryan, it serves the purpose admirably.

Dr. Bogue.—Mr. President, the driving of a few nails into a block, and numbering them according to the number of the matrix or ring, takes but little time and will amply repay the trouble. In this little box three-fourths of the rings have been used; but if each pin held four or five rings of varying width upon it, it would be but a moment's work to find a matrix that would fit any tooth. A very ordinary workman could make up a hundred of those matrices in a short time.

Dr. A. H. Brockway.—Mr. President, this style of matrix, as may readily be seen, is very much like those put out by Dr. Brophy a few years ago, working on the same principle, except that his matrix was retained in place by a set screw rather than by a wedge. I bought some of those matrices when they first came out, but found they were not very easily adjusted, and as they required more trouble than I was willing to give, I have gradually abandoned their use. I have tried nearly all the matrices that have been introduced; some of them with a great deal of satisfaction. The matrix that I have found most serviceable, for use certainly in amalgam fillings alone, is that devised by Dr. Ivory. I presume most of those present are familiar with it. I have found it very easy to adjust, and it serves an excellent purpose, one advantage being that it does not require a space all around the tooth. This one shown here of course does; but the material of which it is made being so thin, that would be a very trifling objection. I am exceedingly well pleased with these, and

shall hasten to adopt them. It is surprising to me how little use is made of the matrix by many operators. But a few days since I met a dentist of most excellent standing who told me that he had never used one; and his case is not entirely singular. To me, I must confess, they are indispensable in the saving of time and in enabling me to do better work. This convenient method of arranging them for ready use is very commendable. Little things like that in the way of saving time add so much to one's efficiency. I am always glad to see anything of that kind brought forward, for the reason that I am a great stickler for saving time. Time is the scarcest thing in the world and ought not to be wasted.

Dr. Dwinelle.—The matrix is an exceedingly accommodating appliance, adapting itself to varying contingencies. The first matrix I ever saw or used was composed of a plate of rolled gold, bent around between the teeth, not covering or embracing the circumference of the teeth, but wedged to its place. You will find an allusion to it in a treatise on crystalline gold which I wrote about 1854. That is the first intimation that I ever had of the use of the matrix in filling teeth. The ring matrix, however, is the best form in use. If it does not always adapt itself to the entire circumference of the tooth it embraces, it can easily be adapted to its place by slipping a wedge in by the side of the tooth at a point remote from that which is being operated upon, and that will taut it down to place. I think the matrix is one of the most useful and practical instruments that we have in our profession.

Dr. Bogue.—It occurred to me when Dr. Brockway said he tried a certain matrix for a little while and then abandoned it, also when I learned that Dr. Dwinelle still persists in the use of chlorine for bleaching teeth when there are lots of other things used for that purpose, that old dogs cannot learn new tricks. I am glad to hear that Dr. Brockway is going to try these matrices. I think every gentleman who will use them will be exceedingly pleased with them.

Vice-President Woodward.—Gentlemen, we will now pass to the reading of a paper by Dr. J. Morgan Howe, entitled, "What is the Essential Basis of Professional Ethics, and the Proper Relations of a Profession to a Trade?"

(For Dr. Howe's paper see page 664.)

Vice-President Woodward.—Gentlemen, you have listened to the reading of this most excellent paper, and I hope that no time will be lost in beginning the discussion.

Dr. Brockway.—I am not in condition to speak at length to-night. Unfortunately, I woke up this morning to find myself

almost deaf, through having imprudently ridden in an open car last evening. I have therefore lost much of the paper which has been read, but have heard enough to satisfy me that it is one of the most refreshing and inspiring papers I have ever listened to. I think it must have warmed Dr. Meriam's heart to hear it; and while he objects to being the first one to speak upon it, I am willing to break the ice, and remove his objection, so that we shall presently hear him. I confess to some feeling of shame and contrition while listening to the paper, and appropriated to myself somewhat of the rebuke which was so properly administered to those who had been lacking in their appreciation of the efforts of such men as Dr. Meriam and others, who have been endeavoring to lift up the standard of professional ethics, and to point out the distinction between professional and trade conduct. I think no one who has listened to the paper can fail to be impressed with the unselfishness which has prompted the efforts of these men, and I proffer to them my tribute of sincere respect and admiration for their efforts in this direction.

Dr. Meriam.—Mr. President, if my story is below the standard of what is admitted to the dignified proceedings of the New York Odontological Society it can be stricken from the report. I remember attending, when a boy, a church the services of which were held in a building hired from another society which was so impoverished that it was glad to rent it to us, holding their own services at noon-time, which was our intermission. As I came some distance, I often stopped at noon to attend the other service. They had a choir-master who was somewhat officious, and one day, when they had a visiting clergyman in the pulpit, who had just given out a hymn, to my astonishment the choir-master turned to the congregation and said, "We will sing the first, third, and fourth stanzas of the hymn." They sang them through, and then the old minister rose behind his desk, and said, "The congregation will now sing the omitted stanzas of that hymn."

Mr President, we assume that we are assembled together to sing a professional hymn, but in the past some voice has said, "You will please omit verses that discuss certain questions; you will please omit the discussion of materials, and omit the discussion of journalism, instruments, etc., and bring forward only those things which have no direct money value, thus singing the verses that do not annoy any one." But, gentlemen, the time has come, I think, when the profession is going to sing the omitted verses of that hymn.

There was a society in Europe, I believe, for the study of

aerial navigation. It had existed for many years, with occasional meetings, at which the members had discussed and reported progress. Of late the results have been more promising, and it has seemed to some of them that success was almost at hand, and that the problem of aerial navigation would soon be solved.

But what has been the effect upon the society? Each member has scented a prospective fortune, and the society has ceased to report and discuss, and has been compelled to disband, in the presence of prospective profit. Now we read that the American Dental Association has run out. We fear there have been some omitted verses that the American Dental Association have not sung. We have consented to the withdrawal of instruments, the composition and formula of filling-materials, etc., as topics of professional study or discussion. This is a question of trade or profession with us; not a question of the name of trade or the name of profession, but as representing two opposite methods. It is impossible, probably, for trade to exist with the freedom that science claims; and it is impossible for science to exist, with its desire to make known, and at the same time submit to, the restrictions of trade. Furthermore, it is particularly impossible for a profession to exist where its members accept service with others whose interests are antagonistic to that profession. In one of the scientific departments of the government, a man was engaged to conduct certain experiments, and at the close of the work he wished to patent the processes and results. This was denied him, as he was hired to conduct certain work, for which he received his remuneration from the government, and thereby lost his title to it. We are bound in honorable contract to our profession on entering it. If a society does not give sufficient return, there is no dishonor in a man stepping out from it; but that he can at the same time claim the right to share in the labors of others and the right to deny to others is to me a contradiction. I am informed that this position has been sustained in a recent decision in one of our courts,—viz., that a man could legally sell beforehand his rights in results when letting himself to conduct experiments, and that under such circumstances he has no claim to the product as his own. Some of the electric companies recognize this in the hiring of their men, the understanding being that everything they shall discover while in the company's employ shall be patented for the company. Now, what business does to protect itself, from business motives, we must do for our profession from professional motives,—discuss and record for it everything relating to its practice.

We wish to render bills for "professional" services, and the courts assume we are bound to render those common to a profession. Thus, both we and the courts assume that our services are the common property of the profession to which we belong, and which all are free to render if possessed of the requisite skill. Now, what makes a patent or secret non-professional is that it is not the profession's, and cannot be used without the consent of others. And our bills might read "For such services as Tom, Dick, or Harry allows us to render."

I hope there will be at Harvard, and other schools, prizes offered for the best thesis on the preparation of some of the filling materials. I do not know why every dental school in the country should not have a pharmacist. I do not know why the attention of men in chemistry should not be called to the chemistry of filling materials. We have such men in our schools, and their teaching, instead of being directed wholly to general chemistry, should be directed somewhat to our specialty, not only to chemistry as it assists in the work of histology and pathology, but also to those things that supply the loss of parts.

In reference to this question of the control, or the attempt to control, our societies, we had a very unfortunate case in Boston. I do not blame any one; the thing has gone on so long that the steps are probably taken without any idea of the reproach they bring on a society. It seems that one of the exhibitors, without asking the consent of the committee, went to one of the electrical companies and had them put in a wire for running his own apparatus, with the understanding that no one else should have the use of it. Now, the advantage of an exhibit before a society is that various inventions or products may be fully shown before them, while it is for the interest of what we may call the trade spirit to keep others out of the way. But I do not think that is consistent with proper pride on the part of our instrument-makers. We, as dentists, must respect good workmen. When dentistry ceases to respect good workmanship, it will lose one of its advantages. But we are not called upon to lose any respect for the workman; we are called on to look at the question of whether a workman shall overstep his bounds and become a director of a society of professional men, and say who shall and who shall not be represented there.

I do not know whether this story reached General Walker, the President of the Institute of Technology, who occupies the highest position in all matters concerning education, but when we went to

them again for the use of the Institute of Technology, he made very particular inquiries about the exhibit, what it was to be, and so on, and it ended by my assuming all the responsibility of damage, with the assurance that the exhibit should be educational. The rival exhibits were placed side by side, and in that way we overcame the exclusive idea. I think this, perhaps, gave offence because misunderstood.

I am of course aware of the changed conditions of life brought about by our modern advantages, and that now, in mercantile affairs, some of the finest brains of our times find occupation. But I cannot feel that human life and right should be held to be less sacred, nor that the labor of the physician should be no freer than that of the carpenter or blacksmith. I come to this great city, pass along its streets, and see all that modern progress has brought. I admire the marvellous development, and, while I admire it, as I should, I hope it will be a long time before we shall think of questioning the right of the ambulance to the right of way in our streets.

Dr. W. W. Walker.—We all like to hear an honest paper, coming from a truthful worker, and I believe that every word Dr. Howe has written and read to us this evening he honestly and truthfully believes. He has diagnosticated the case perfectly, but he has failed to give us a remedy. The remedy is a very simple one indeed. In the first place there are many essential things in the formation and the "running," as we may say, of a dental society, or any other organization. One of the most essential parts of any organization is its membership. When persons are admitted to a society they should attend religiously to the duties of that society, not simply have their names proposed, be admitted, and then stay away. It is very essential also that the finances of a society be carefully looked after if the society is to have success and influence, and there must also be harmony among the members. I contend that no organization, whether it be dental, medical, or any other, can be successful unless there is harmony among its members.

Dr. Howe spoke of the First District Dental Society, of which I was at one time quite an active member. He also mentioned the *Dental Cosmos*. Gentlemen, in working as an executive officer, of a dental society, it will be found that there is much necessary data which cannot be obtained in the ordinary way or through every dental journal. There are not many good dental journals in the United States to-day, and I hold that among the first of them is the *Dental Cosmos*. From the publishers of the *Dental Cosmos* I

have received much information necessary to the proper carrying on of the business of the First District Dental Society; they have also given me notes that have been useful; but I do not believe they have ever paid for our printing. They have assisted us in a clerical way, and that assistance has been valuable, for they have given us the names and addresses of gentlemen in our profession that we could not get in any other way.

I repeat, Mr. President, that one of the most important factors in a dental organization is harmony. The very moment that we get rid of petty jealousies among members, just that moment can we bring out all the members to work in unison and harmony for the good of the society and of the dental profession. Then we will have found the only remedy for the abuses which have been spoken of. When the mass of dentists in a society, or in the city and State of New York, show a willingness to work for their society and for the dental profession, then the dental manufacturers and the dental journals will be compelled to come to us for support, and not until we have such harmony and unity of action among ourselves can we hope for it. Dentists must unite and work in earnest for their societies and their profession at large, instead of allowing personal interests and jealousies to control them. At this meeting of the Odontological Society, one of the best societies in the country, there is a very small representation of its members. It seems to show that other considerations than the welfare of the society and the profession govern their action; and it is so in the First District Society. Not until we are united and thoroughly in earnest can we fight our battles successfully and be independent of corporations; and when we are united they must come to us.

Dr. Lord.—Mr. President, while some one is getting ready to speak, I move that we give a very hearty vote of thanks to the authors of the very interesting and instructive papers that we have listened to this evening.

Motion carried.

Dr. Bogue.—Mr. President, I feel moved to make a word of thanks and acknowledgment to all the gentlemen who have enlightened us to-night. At the same time I want to call attention to a slight difference between my ideas and those expressed by the last speaker. What he says is so eminently true generally that I think it is well to call attention to one of the points he makes, which seems as though it were in opposition to the tenor of Dr. Howe's paper. He calls attention to, what no one knows better than he, the difficulty of running a dental society and keeping

harmony within it. I have every reason to believe that his labors in that direction, the amount and extent of them, are known to very few persons, even though those efforts may accomplish great ends. I do not quite know if he meant to offer that as an excuse or not,—I do not think he did, but it was not clear,—as an excuse for our dependence more or less upon dental dealers. It seems to me that we have reached a point where we ought to take ground as a profession in favor of our own independence and freedom from the trammels of any company or organization whatever. It seems to me that the difficulty that attends the management of a dental society, which has been referred to, ought to incite us to a different kind of effort from any that we have put forth. For example, we find ourselves shut off from advertising such a little thing as I presented this evening. Nobody is to profit by it, and unless the dealers who publish the magazines can make a profit, they do not wish to publish any such appliance; for the reason that it can be made by every dentist in his own laboratory, and it is much more efficient than many expensive instruments. I was two years getting a little syringe made. The S. S. White Company at one time agreed to make it, but subsequently said they could not, and I finally had it made in Paris. I think it cost me sixty cents. It corresponds in every respect save one to the Dunn syringe, which costs, I believe, two dollars and fifty cents. The one respect in which it does not correspond to this syringe is that the contents of the Dunn syringe cannot be seen, but this drop-bottle syringe, being made of glass, shows exactly what is within. It is a cheaper and better instrument, but it is not procurable here.

Suppose we were to get from a pharmacist a formula for oxy-phosphate, or from a metallurgist a formula for an amalgam, and offer them for publication, how many publishers of existing dental journals would agree to publish them?

Quite lately I have been looking for a recipe which exists for soluble tooth powders. In the course of my researches I sent to the S. S. White Company for a box, and received one duly labelled "Soluble Tooth Powder;" I put some in a glass of water and tried for two weeks to dissolve it. As it did not dissolve in that time I thought it was not very soluble. The original recipe of that powder was one devised, I think, by J. D. White in his younger days. I suppose it is cheaper to use the label as it is and substitute some other materials than it would be to make it according to the original recipe. I do not know that that has been done, but after two weeks' trial to dissolve the soluble powder I was unsuc-

cessful. If I can rediscover the formula and get it into the hands of my professional brethren it may be of benefit to them.

What I do not understand, and never have understood, is that we should so frequently endeavor to anticipate what the profit of the thing we are doing will be. That in a great measure will take care of itself. The questions for us are, how well can we accomplish our operation, with how little pain, how promptly, and how easily to use the things that our profession is so rich in; the little devices that are so useful, and illustrations of which we do not often see. We all know that it is a little difficult to get such illustrations spread at large among the profession.

Our odontological friends in Great Britain have a superior magazine, and there is not an advertisement in it. The minutes of the meetings are published in a little pamphlet by themselves, and are so distributed to members. In that respect it is as professional as even our most severe critics could desire. Why should we not sufficiently emulate them as to have published in our interest the proceedings of our societies and the papers of our investigators and the theses of our students, and let the advertisements that may or may not come to those journals be dependent upon the wish of those advertising to place their wares before our twelve thousand dentists as a class? Why should it be necessary for us to pander to those advertisers sufficiently to urge them to advertise, and keep out of the columns of any such publication all matter that might in a sense be injurious to their trade interests? That is, as I understand it, the position that Dr. Howe has taken, and I feel grateful to him, and to others who have taken similar ground; and the moment that I see ideas of that kind spreading so that every man in my craft is anxious for the benefit, not only of the other members of the craft, but for the community at large who are served by us, then for all such we may cherish and express regard and respect. Moreover, it has been said that we are yet as a profession almost in our infancy; we have made some progress, but we cannot have the things we desire until we possess the means. Our course has been an open-handed one. We recognize the fact that we have received freely, and we should freely give without hope of reward. If we were all to take that high professional stand, it would not be long before the oculist, the aurist, the gynæcologist, and the dentist would all be recognized as being part and parcel of the healing art; and our materials could be purchased at a pharmacy, the same as with our friends of the other branches now. I hope, for one, that we will not be put in the attitude of fighting a trade-union. I sup-

port very heartily the body that will found its own institutions. I do not want to quarrel with the White Company, with the Welch Company, or any other company that furnishes good materials. If they furnish bad materials, I will quarrel with them. I should regret very much to see this society enter into a crusade, as against trade stores that are doing an honest business, and supplying good materials. On the other hand, I decidedly object to those dealers in materials, or the trade-unions, holding a hand over us, and consequently our receiving from them any advantages or compensation, or any tips, or what we may choose to call them.

Dr. Dwinelle.—I will say a single word, Mr. President, on this subject, rather than see it passed by. It seems to me that Dr. Howe's object is a very commendable one,—that is, to elevate our profession. It is true that we require not only the element of harmony, but we require every possible element in our progress that may tend to that great end. I do not think that the doctor has any intention of putting a firebrand in the community to incite it, or to divert it from its legitimate purposes. We have a code of ethics, recognized throughout the professional world, and it seems perfectly proper that we should be governed by it. I do not know why we should fail to be governed by those general ethical principles which govern the world at large, and have from the time civilization began, and yet make an exception in the case of dentistry. It seems to me that the doctor's paper has been entirely consistent with these ethical ideas, and I do not know why we should make an exception in our case. The element of harmony is desirable under all circumstances, but deference to this alone would not correct the mistake, or remedy the difficulty. We need something more, something higher.

In the medical profession, we all know that a man of intelligence will not take a remedy from his family physician, unless it is his privilege to know the constituents and the character of the ingredients the prescription is made of; and I see no reason why it should be different with the materials we use.

It seems to me that Dr. Howe's paper is a very proper one. That we are not perfect as a community of dentists is very true. We may make mistakes, but in due time we will profit by our experience and reach a higher status. It seems to me that this is one of the best papers I have ever listened to. It is one of the most important steps in the higher progress of our art and our profession, that I have had the privilege of becoming familiar with in a long time.

Dr. J. F. P. Hodson.—Mr. President, I rise to record my heartiest approval of the high general tone of the excellent paper to which we have been listening, and its cordial endorsement by the speakers who have preceded me argues that it has but reflected the good advance which has been made in the general mind of the profession in the direction of dignified professional status. Inasmuch, however, as special reference has been made in derogation of the fact of the clinics of the First District Dental Society being held in the establishment of the S. S. White Dental Manufacturing Company, it is but just that, as executive officer of the society, I point out that the clinics have been held precisely as now for very many years, and it can scarcely be questioned that their influence, and the good accomplished by them in all these years, has been very great. Their continuance is made mandatory upon the officers of the society, so they cannot be stopped without change in the by-laws, and lastly, change of place would necessitate a very large outlay for chairs and paraphernalia, and for the necessary room in which to place them and to hold the clinics. If the time has come for a change to be made, and if gentlemen really wish it, nothing is more easy than for them to attend the meetings of the society, and, by their propositions and votes, make that change, or any other.

Dr. Dwinelle.—I want to correct a mistake that Dr. Hodson has fallen into. It seems to me that what he refers to in his remarks did not have any special application to the paper to-night. The paper, I know, refers to these things as being unprofessional, and the question is, Is the statement correct? Is it unprofessional? If it is, then the argument has full force up to the present moment. If there is not money enough to overcome the difficulty in the matter of paying for a room elsewhere, and have the clinics held at some other place, that has nothing to do with the question. It is a misfortune that the society, of which I am a member and which I honor very much indeed, is unable to do in this matter what it would like to. It was founded by one of our dearest friends, and we should be jealous of its good name, and everything pertaining to its standing. I think Dr. Howe's proposition still stands true and uncontroverted,—that it is unprofessional for a society like ours to be under obligation to any foreign influence. We should have clean hands. If we are not able to furnish a room, that is our misfortune, but the proposition stands true all the same. We cannot afford to sacrifice principle to a beggarly contingency like this.

Dr. Meriam.—I think the position is something like this: It has been a question with many an English Mary, whether she should

marry John, work hard, and be clothed in cheap apparel, or become the favorite of the squire's son, who would provide sumptuously, and deck her in silks and gay attire. And some, no doubt, have chosen that which seemed the easier way; but still, that is not the sort of prosperity we wish for those we love. Nor should we wish our profession to be supported by trade. Among the rules governing games at universities is one that those who play on the professional teams for hire cannot play on the university team. It seems to me that we could apply that rule very well in our profession. There is no dishonor in working for hire, and there is no added honor, perhaps, in working for a profession, but we cannot play for hire outside of the profession, and play inside of the profession at the same time.

Dr. Dwinelle.—We cannot serve God and Mammon.

Dr. Meriam.—That is it.

Dr. Howe.—Mr. President, I wish to say that no reference made in the paper has been for the purpose of criticising or fault-finding. Facts have been mentioned only to illustrate the object for which the paper was written. There seems to be, in the minds of some, considerable confusion, as is shown in various contributions to the discussion of this subject. There is no one who desires harmony more than I do, but there can be no harmony while such relations exist as must constantly suggest and provoke agitation and dissension. Lasting and real harmony can only rest on a basis of truth, and the profession, if it is a profession, must rest on a professional basis in order to have professional growth. I think we have no need so great at the present day as the cultivation of a professional feeling among dentists. Even the dissemination of knowledge, and the cultivation of desire for scientific inquiry, may be for the present considered secondary to the question, whether dentistry is to be really a profession, or to be hampered and bound by commercial control, so that it shall be able to do, and to use, only what shall prove advantageous to those who hold the power to dictate.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

Editorial.

PROFESSOR W. B. MILLER.

UNUSUAL space has been given this month to the reports of banquets recently held in different sections. The remarkable ovations that have met Professor Willoughby B. Miller, since his advent to our shores, have a significance that is at once an honor to him as they are interesting as a mark of progress in the manner of treating our original workers and thinkers. It has been given to but few scientific men to receive such marks of approbation. The walks of science are in the silent cloisters,—in the laboratories,—away from the plaudits of men; indeed, it may be supposed the very entrance of possible praise or blame of an outside world would be inimical to true investigation. The seeker after truth needs no incentive but the value of results. The ambition of the scientist lives on what is developed, and even the thought of the intruder is a disturbing element.

Hence, it is very true, that the spontaneous ovation of esteem must have been in the light of a surprise, and, perhaps, in some measure not quite comprehended, as the honest investigator is certain always to undervalue the results attained, and looks upon them merely as stepping-stones to something higher.

While these remarks are unquestionably true, the present outburst of feeling is at once gratifying, and in a measure represents a growing conviction that the time has come to recognize the recluse of the laboratory as the man of the hour, the one who is erecting the foundations for all the knowledge we possess, or are likely to come into possession of,—the “house we live in.” It is, therefore, significant as a time of mental growth, and celebrates this quite as much as it means honor to the man.

This is the view in the broader sense of scientific work; but in the more limited range of dental labor it means even more than that, as it is the marking of an epoch, the celebration of a period when the dreams of a past century have reached an actual realization. It is the culmination of the work of many. It means, if it means anything, that a long and difficult problem has been solved.

as Farrer's "Irregularities of the Teeth" and Miller's "Micro-Organisms of the Oral Cavity," the first after seven years of labor, and the latter ten, is an epoch in dentistry and calls for special notice. They furnish the best illustration of the change in the general trend of professional thought and work towards a higher standard.

DEATHS FROM CHLOROFORM IN NEW SOUTH WALES.

THROUGH the kindness of Dr. Alfred Burne, of Sydney, Australia, we are in receipt of slips giving a report of a discussion in the journals of that city relative to the alarming increase in deaths by chloroform which have occurred in New South Wales since 1885, and especial attention is called to the fact that in Prince Alfred Hospital three deaths have taken place in a "few weeks." These communications have more than a local value but are too extended for our space. The exhibit will, doubtless, be read with interest by those who regard the A.-C.-E. mixture entirely harmless.

Domestic Correspondence.

ODONTOLOGISTS.—*Handsome Dinner at the University Club in Honor of Dr. W. D. Miller, of Berlin.*—The Odontological Society of Cincinnati had the pleasure of entertaining Dr. W. D. Miller, of Berlin, one of the many members of the dental profession who have made the United States so justly celebrated abroad, as the Alma Mater of the new-born science. Like many foremost men in the various walks of professional and political life, Dr. Miller is an Ohio man, born and bred. He is the only American holding a professorship in a German university, namely, the University of Berlin. His researches into the causes of dental caries, demonstrated by exhaustive experiments, have made him an authority upon the germ theory of the etiology of dental caries.

The University Club threw open its doors with cordial welcome.

Among those present to do the honors of the evening were Dr. F. A. Hunter, President; Dr. C. M. Wright, Dr. O. N. Heise, Dr. W. M. Williams, Dr. J. R. Callahan, Dr. J. Taft, Dr. J. S. Cassidy,

THE PRESENT NEED OF THE JOURNAL.

As we are soon to enter a new year, this becomes the period when all subscriptions should be renewed. The support of the various and considerable expenses connected with the publication of a journal depends upon the degree to which the appeal for subscriptions is responded to. If this be indifferent, the effort to extend the work is hampered. In case the reply is a generous one, there is scarcely a limit to what may be done in the direction of improvement. We have been faithfully endeavoring to satisfy the wants of our readers, and feel we are entitled to generous support. We therefore, with earnestness, ask each present subscriber to renew, and also desire all old subscribers, who for any reason have suspended their subscriptions, to again forward their names and money.

We also beg each subscriber to interest himself to solicit others to join him in aiding this endeavor, and we further trust each member of the company, wherever situated, will help in the effort to greatly increase circulation for the coming year.

We respectfully call attention to the price and terms on the first page of the cover, and also to the red folio in this and the next issue.

It may not be improper here to state that this journal is under the auspices of many leading dentists of various parts of the country, and is an outcome of their desire that the profession may have a mouth-piece for the full expression of its wants, and which may become, if properly supported, superior to any dental journal heretofore known. The members of the Publication Company under no circumstances can have any share of the pecuniary results, these being devoted to the production and improvement of the journal. As the journal, therefore, exists solely for the advancement of the profession through the record of facts and the instruction given, it appears to be the duty of every dentist to aid a cause which either directly or indirectly is to his interest, and which also is conducive to the good of the whole body of our fraternity. *

DR. J. N. FARRAR'S WORK ON IRREGULARITIES.

We take special pleasure in being able to announce that the first volume of this remarkable work will be ready for distribution in a few days. A full review of it will be given in our next number.

That this year should witness the publishing of two such books.

It means that the opprobrium of the dental and medical profession (for they are about equally involved) has been removed, and that by a dentist. That this is worthy of rejoicing along with the other great events of history must be clear to the average mind.

The fact brings up, however, this important reflection, a point that never should be lost sight of,—that no one man does the whole work in a given line of investigation. This can be said without disparaging in the least the results attained by any. The work of the world is an aggregation. It is developed from the simple atoms of thought to the ultimate perfected truth.

When the scientific mind of the dental profession examines the steps that have led to this elucidation of dental caries, the impression must be strongly felt that it has been a progressive development from the time that Leeuwenhoek (1722) demonstrated, with very imperfect means, the existence of low forms of life. From which gradually grew the idea that the invisible life was a powerful factor in changing conditions in the visible world, a fact freighted with immense results for the future life of peoples, and which led up to the remarkable work of the present.

In the special subject of dental caries we trace a direct series from Ficinus (1846), with his "*Denticolæ*," which became "*Bühlmann fibres*" by union, to Tomes (1848), who found a "*peculiar vegetable growth that infested carious teeth*," to Klenke (1850), with his purely inflammatory dental caries, "*protococcus dentalis*," and putrefaction, and, last, chemical action. From Klenke to Leber and Rottenstein, with their brilliant monograph, that stirred the dental world as nothing else previous to the Miller papers. Then came the valuable work of Milles and Underwood, and from this to the subject of this article. Each of those mentioned performed a portion of the labor that led to the final conclusions. It is, therefore, proper that we should recall the underlying work of these men, some pioneers, and others contemporary with Dr. Miller. In a review of the past and present, let us not forget also the labors of others not already mentioned,—of Ehrenberg, Neumann, Wedl, Weil, Walkoff, and Koch, in Germany, Pasteur and Magitot in France, and of Clark, Black, and Abbott in the United States.

The elucidation of the mysteries of life is but in its infancy. The problems may never be wholly solved; but when one step has been finished it is our duty to stand upon it, and, looking forward, give honor to the builder.

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JOURNAL OF DENTISTRY WORK ON IRREGULARITIES.

We assure in being able to announce that the remarkable work will be ready for distribution. A review of it will be given in our next number. We should witness the publishing of two such books.

Dr. Frank Abbott.—I have very great pleasure in being present here this evening to honor our guest. It was original investigation that placed him in an educational institution in a foreign land. Professor Miller, in my judgment, has accomplished more in original research than any one in his particular line of work in the world. We honor all workers. Dr. W. H. Dwinelle, our president, has done more for dentistry in this country than any man now living. How many men could have been drawn together fifty years ago to do honor to any man? I am glad to hear that some time in the future we may have Professor Miller with us in this country, and if this should prove to be the fact, I can assure him of the earnest co-operation of the profession here.

Dr. C. E. Frances.—I am supposed to be called upon to make some remarks on our guest's connection with journalism. In the earlier days of the *Independent Practitioner*, Professor Miller contributed largely to it of his original investigations. These were copied everywhere until no one could be unfamiliar with the name of Miller, of Berlin. His labors have been untiring, and have been given gratuitously for the benefit of his profession. I am proud to feel that he is an American, and he can feel assured that if he should at any time conclude to make his home in his native land, it will be with the warm welcome of his professional brethren.

Dr. W. Jarvie.—I wish I could represent Brooklyn as it deserves upon this occasion. Many have pointed out the destructive agencies that possibly had to do with caries; but Professor Miller demonstrated the cause, and when the origin is known the remedy can be intelligently applied. We feel our great indebtedness to him; but while we can only show our appreciation at this time, in this way, we would beg him to go on with the work that has given us so much in the past.

Dr. Norman W. Kingsley.—I do not know who selected me to represent the profession at large. The remarks that I had elaborated some days ago have gone from me; but I am reminded that "the mills of the gods grind slow, but they grind exceeding fine." I have often wished I could find God's miller, and in his presence, being found, I feel exceedingly small. There are thirty thousand dentists in this country; but there is but one Miller. I don't expect ever to be a Miller. He has carried his investigations to a point that there is no possibility of our ever reaching him; indeed, I may say, I have no desire to attain to this, notwithstanding my ambition is to be in the front rank of the profession. Let us accept his investigations of microbic life as conclusive.

Dr. Kingsley then alluded to the Italian law recently enacted, requiring six years of study in medicine; after which the study of dentistry may be entered upon. It would, he remarked, be a sad day if such an edict were passed in this country. Would it be possible for a man after such a course to attain results reached here? Suppose Thalberg or Josephy were obliged to go through this theoretical training, could they ever have become masters in musical execution without the manipulative skill acquired by the use of the fingers? If such is to be the training we may have scientific men, but how the community will suffer. Shall we speak of ourselves as only dentists? I am only a dentist, and am not ashamed of the name. There is one thing I admire in Professor Miller, and that is he never repudiates dentistry.

Dr. W. H. Atkinson.—Brethren, it is no light thing to be esteemed by those who know us well. If there is an individual I reverence, it is a naturalist. There are by-ways in which inspiration flourishes. How many are willing to accept the inspiration of the moment? You refer, Mr. President, to my history. I have no doubt but it might be of value to some. Text-book teaching has been accepted and found false; but when the truth in its simplicity has been discovered, then, each and all know what is meant by it.

Compare this night with 1862, and you will see what the angels of light have done for us. Our brother has simply been delivered from false authority. When a discovery is made, let it be told. When one is converted, he goes forth and proclaims it. Let revivals become perpetual, and then we will have no more quarrels.

Dr. L. D. Shepard, Boston.—I have been sitting in fancied security, because I had not been informed that I was expected to speak on this occasion. I am glad, however, to respond to the request. I feel forced to portray to you a character. A young man graduates in a school of learning, goes to Germany, and from there commenced the study of dentistry. The heart became involved in the work, and also the intellect. From a student in the University of Berlin, he eventually was called to fill, by the force of his acquirements, a chair in that same institution. We are here to-night to recognize the work that led to this honor. Those who were present in Berlin, and witnessed the ability and tact which Professor Miller displayed as secretary of the Section of Dentistry of the International Medical Congress, could bear witness that amid many jealousies and conflicting interests, he maintained the respect of foreigners and the people at home.

We think lightly of the labors that have brought about results made familiar to all of us. I stood, in 1883, in his laboratory in Berlin. With all the outer air excluded to prevent the ingress of micro-organisms, I found the atmosphere unbearable, and returned to my home with a violent headache. It must be remembered that Dr. Miller experienced the injurious effects of this condition night after night and month after month, in order that the results might be verified. We should for these great sacrifices do something more than merely applaud. We should combine and make a substantial fund to compensate those who devote their lives to original work.

Dr. James Truman, Philadelphia.—While not anticipating a call to speak on this very interesting occasion, I cannot refrain from adding a few words. When at the gathering in Philadelphia last evening, where were assembled the foremost men in medicine, science, and in our own profession, it seemed to me that at last dentistry had been elevated from the ragged waif—the forlorn child of the professions—to the position which of right belonged to it, shoulder to shoulder with its elder brother. When Dr. Harrison Allen, emeritus professor of physiology in the University of Pennsylvania, in response to the toast, “The Bond of Union between Medicine and Dentistry,” remarked, “Why, gentlemen, there is no bond, they are one and the same thing,” I felt that the demand for recognition, of which we have heard so much, had at last come, and in the only true way, and that so fully illustrated by the guest of the evening, in the cultivation of the best within each one of us.

I have been much impressed with the spontaneity of these efforts to express gratitude for Professor Miller’s work. Without collusion, Cincinnati, Buffalo, Philadelphia, and now New York hastened to do him honor, and in a short time our brethren in London will extend, in a similar way, their congratulations and best wishes for an enlarged future. I join with you on this occasion, in the paramount thought of the evening, that our guest may still continue to lead in investigation in the lines he has so happily marked out in the past.

Dr. E. C. Kirk, Philadelphia.—One thought has been with me for some time, and when the president requested me to speak, I thought it might serve as an illustration, to give you an allegory. A certain official had a dream, and it appeared to him that he went to the realms of eternal bliss. The applause which he received there for his work was so overwhelming that it created in his mind a strong desire to return to earth and continue the labor

that had been so productive in increasing his happiness. The moral of this seems to be that we hope the return of Professor Miller to Germany may result in a similar manner.

During my college days I sat on the same bench with Dr. Miller, and naturally felt a deep interest in him and his work. He was actuated then by a desire for knowledge based on accurate investigations.

We are not here to do honor to Professor Miller. His work does that for him. Let him carry home the feeling that we—his professional brethren—are grateful for the means he has placed in our hands to combat the evils we meet with in practice.

Dr. C. S. Stockton, Newark, N. J.—Every person has at some period in his life the desire to look upon the faces of the great world-workers. Now I have had this feeling in regard to our guest. I am glad to be here to-night to represent New Jersey, and to meet him face to face, and to express to him that, in my opinion, no man has done more to raise dentistry to a higher level than has Dr. Miller of Berlin.

Dr. S. S. Perry, New York.—For the last twenty-five years there has been a marked cultivation of the mechanical side of dentistry to, perhaps, the exclusion somewhat of the theoretical. Dr. Miller has given us the means of saving teeth other than by mechanical agencies. In dentistry there exists the same pathological conditions as in medicine and surgery. We will, in the future, be obliged to combine the skill of the surgeon with the theoretical knowledge of the general practitioner.

Dr. C. F. W. Bodecker.—I have felt very much like the passenger on the boat this evening, who said to the captain, "Let me sail this boat, I can sail it as well as you," but when it came to the test, he failed to hold the boat to the wind. Now, I feel as though I was called upon to sail without bringing my boat into the wind, as it has all been taken from me by the previous speakers. I cannot add anything to the appreciation manifested; but it is felt to the same extent as has been expressed by others. I am proud of Professor Miller's position in Europe; but for myself, I regard this country as my home and possibly with right, as I have been here now twenty-one years, and could not think of giving up my naturalization, as I could not feel as comfortable as I do here.

Dr. L. S. Straw, Newburgh N. Y.—I wish I was a Miller; but, not being one, all I can do at this late hour is to extend to our guest my right hand, as an evidence of my sincere appreciation of his work.

•

Dr. Dwinelle, the president, then requested those assembled to rise and drink to the health, continued prosperity, and successful voyage of our guest to his adopted home.

Thus closed one of the most satisfactory and enjoyable banquets held by the dental profession in New York. The feeling of sincere appreciation manifested doubtless left its impression on the gentleman the banquet was intended to honor, as it certainly did on those present, and its informal character gave to it a charm not always felt upon similar occasions.

BANQUET TO PROFESSOR W. B. MILLER IN PHILADELPHIA, OCTOBER 6, 1890.

THE reception in honor of Professor W. B. Miller, at the Colonnade Hotel, on the evening of the 6th of October, was remarkable in many respects, and more worthy of special notice than such occasions usually are. The Committee of Arrangements very wisely determined to make it a gathering of the best men in medicine, dentistry, and general science. The result justified the wisdom of this, and the addresses partook in consequence more of the character of a dignified discussion of principles rather than the ordinary vein of "after-dinner" speeches.

It is with regret that these remarks from representative men cannot be reproduced in full here; the mere abstracts we have space for do but feeble justice to them. They were, however, stenographically reported, and will in due time appear in proper form.

Professor E. T. Darby, in calling attention, as president of the evening, to the presence of the distinguished guest, remarked:

"About thirteen years ago a young American gentleman, residing abroad, came to me with a letter of introduction. This letter stated that the bearer was about going to America to pursue his studies in dentistry, and that he gave promise of being an ornament to the profession he had chosen. The gentleman introduced is our guest this evening; the one who wrote the letter is also present, and I shall ask him to respond to the toast of 'Our Guest.' Professor James Truman, of the University of Pennsylvania."

Professor James Truman, in response to the toast, called attention to the marks of progress that had been made in scientific history, in this particular research, from Leeuwenhoek to Pasteur, from Pasteur to Koch, and from Koch to Miller. After alluding to the men of the past and those who surrounded him, distinguished

in various walks of science, he discussed for a few moments the tendency of the age to seek special lines of work, and the effect of this upon the person and upon the State. He then alluded personally to Professor Miller, and said, "I remember very well, some thirteen years ago, Professor Miller, then a student in Berlin, calling upon me while in that city, and requesting my advice as to the selection of a profession. Whether the advice I gave him at that time was taken or not, he came to America and graduated in dentistry at the University of Pennsylvania.

"It is important to lay a good educational foundation, and, appreciating this, we find our guest starting out in life at the Michigan University; from Michigan he went to Edinburgh, from Edinburgh to Berlin, from Berlin to the University of Pennsylvania, and from there back to Berlin, to receive, in due time, a professorship, the first American so honored."

Allusion was then made to a visit in 1880 to Berlin, and an interview with Professor Miller. He was then busy in his laboratory, and soon thereafter appeared those remarkable papers on dental caries which have made him known throughout the world. He then, in a few brief sentences, on behalf of the Odontological Society, welcomed the guest of the evening to Philadelphia, the Mecca of medical science, and to the city where dentistry has always been honored, and where it has accomplished some of its best work.

TOAST: The Dental Specialty in Europe.

Professor W. B. Miller said, "I cannot endeavor to respond to this toast without first expressing to my friend, Dr. Truman, my sincere thanks for the very kind and flattering words which he has just uttered. I wish also to express to the Odontological Society of Pennsylvania and to the representatives of the dental profession here to-night my sincere thanks for the part they have taken in organizing this complimentary dinner, which is so flattering to me. Again I wish to express my thanks to the many eminent members of the medical profession who have not deemed it unworthy of the occasion to be present. I can assure you that I recall the fact that many of you here to-night were distinguished in your separate professions before I thought of studying dentistry or anything else that I can recollect. When I recall to mind that I was a student under many present, I feel unworthy of the honor which you are paying me, and will rejoice if I shall ever be able to feel in the future that I am to some extent at least worthy of it.

"In regard to the question of the dental profession in Europe, the practice is so different in the various states of Europe that it would be impossible, in so short a time, to give any idea how it is carried out in each. The dental profession in Germany is in a peculiar position. In 1889 a law was enacted which is called *Gewerbe-freiheit* (freedom of trade, freedom of profession), conferring upon every one the privilege to practise medicine or any specialty of medicine without any qualification whatever. The effect of this law was not marked upon the medical profession either for or against. In regard to the dental, it had, however, a serious result. After its enactment, a class of practitioners arose in the practice of dentistry without any qualifications. To illustrate the effect, I will give you an example: A distinguished physician had a married woman to attend to his office, to see to the proper cleansing of the instruments, adjusting the rubber dam, etc. Her husband was the servant of another dentist, and he, being in the mechanical laboratory of his employer, acquired some knowledge of artificial work. In course of time they established themselves in a dental office without having attended any school, or having received any education worthy of mention. The lady took in hand the extraction of teeth and the husband the mechanical part. In a short time they had a lucrative practice, numbering among their patients a duchess. This will explain the large increase of this class. While there are at present not more than one thousand legally-authorized dentists, there are four or five times as many in the practice of dentistry who have no qualifications, except that they have picked up the information as chance offered. These men are sometimes skillful, and they are able to compete with those who have attended college two years and have passed the examinations. It was but a few years ago that dental students in Germany received any instruction in practical dentistry, and consequently the dental practitioner was generally launched upon the world without sufficient knowledge. It will, therefore, be understood why 'teeth artists' and 'teeth mechanics' were able to enter into competition with the regular dentists. This has had a certain good effect, because the regular dentists are beginning to recognize the fact that they are not able to compete with this number of 'teeth mechanics,' and are beginning to better qualify themselves for dental work. In the last few years marked progress has been made in Germany. Years ago a few dentists went over to Germany to practise dentistry, and exerted a marked influence. The Germans caught on to their methods, and have now attained to a high standard of practice. Within the

last six years the first schools of dentistry have been established as departments of the various universities in Germany. At first there were only two, one at Berlin and the other at Leipsic. Since the dental school in Berlin has been established a large number of students have studied in that city, and it has been our earnest endeavor to emulate if not to arrive at the same point of excellence as the dental institutes in America. It is not possible in a few years to create a dental college in Germany which can be placed upon the same footing as the older dental colleges in America, but we are doing all we can to acquire this point of efficiency, and we find our students earnest and industrious. In one respect we think our dental institutions are better than those in America, because we engage personally in the instruction of the students in the clinics. I have to be at the dental institution two to three hours daily, giving instruction in dental manipulations, filling teeth, etc.

"I come now to the third point, which I consider of more importance than those to which I have referred, a point which has had more effect upon the development of the dental specialty in Germany than any other, that is the study of bacteriology. As you know, it is but a few years since the introduction of the well-known methods of Professor Koch, by which the study of bacteriology has been made accessible to every one. Many have since engaged in the study in the human mouth. This has been a portion of my work. A great many micro-organisms are present there, and they find a fertile field for vegetation, feeding upon the dead matter therein contained. Up to the present date seventeen micro-organisms, which are divided pathologically into three groups, have been discovered in the human mouth, and have pathogenic properties. When we consider the fact that in the oral cavity not less than seventeen pathogenic micro-organisms have been found, and that a larger number may yet be discovered if experiments are continued, we may have an idea of the effect upon the human body. This has created great interest upon the part of physicians as well as dentists, and many clinical cases have been reported which bear out the fact that the oral cavity exerts an influence upon the general health, and that the profession of the dentist is second to none in importance. I will give you a few instances to substantiate this view. In looking up the literature of the case, I was able to find ten to fifty cases of death resulting from abscess of the teeth or from dental operations which had been carried out under improper antiseptic conditions. Some time ago a student of mine, engaged in similar investigations, was able to find in a short time the history of not

less than nineteen cases of similar character, which had occurred in two hospitals in Germany. Some months ago a man was found dead in the neighborhood of Berlin. There were no signs of external violence, no chemical agents had been used to bring on death. The autopsy brought out the fact that death resulted from meningitis, which was traced to caries of the teeth. A few months later a lady graduate in a dental college had the misfortune to wound her hand with a dental-engine bur while operating upon a carious tooth for a patient, and the last I heard of her was that there was little hope of her recovery. There are hundreds of such cases, but the practitioner is not willing to make them public.

"A distinguished specialist of Posen has occupied himself with this subject, and he mentions that loss of appetite, nausea, general ill-health may be brought about by improper attention to the mouth, causing a chronic state of putrefaction, the products being absorbed by the mucous membrane, with serious results to the general health. He was able to restore a patient by nothing more than properly cleansing the mouth. It has also been ascertained that the condition of the oral secretions and caries of the teeth act in other ways. Examinations of nine hundred and eighty-seven children in this way demonstrated that ninety-nine per cent. of all those suffering from caries of the teeth were affected with putrefaction, swelling of the lower glands, etc., of which no physician would be able to make a diagnosis.

"I examined one case from which there was an unpleasant odor to determine how many bacteria may be in the human mouth at one time. I found there were millions of germs. Of these, a large number are swallowed at every meal-time, and in persons predisposed exert a malignant effect upon the general health. I will also cite one significant case which occurred in Berlin. James Israel, who has done so much work in this direction, discovered in one lung a very small body not much larger than the head of a pin. He sent it to me for examination, and I found it was dentine broken off from the root."

Dr. Miller then entered into an explanation of how a certain pathogenic form is a constant inhabitant of the mouth, and entering the lungs may develop pneumonia, and experiments, recently made, have "almost established the fact that micro-organisms may exist in the lungs for a long period without any ill effect." He then continued:

"These facts I think are sufficient to show the immense importance of a proper care of the human mouth, and the action

which it exerts on the general health, and we consequently will not be astonished that in Germany there has been a marked progress in the dental profession in the last two years. Physicians have taken more interest in our specialty; at the same time we need a higher standard of education in order to bring out a better appreciation of these facts, and to this end we are aiming in Berlin to increase the course of study. At present we have virtually a three years' course instead of two, which we had a few years ago. At the same time physicians as well as dentists recognize the fact that medicine rests upon common ground with dentistry, and it would be as impossible to separate medicine from dentistry as to separate the human mouth from the alimentary tract.

"I am afraid I have not been able to present this subject to you in the way I wished. I have tried to be brief and say much in a short time, and consequently I have, I fear, not said much of anything. I wish, however, in closing, to repeat my expressions of thanks to you for the honor conferred upon me, and hope that I shall be able to continue my experiments, and if I do not merit the distinction now conferred, which I do not believe I do, I hope I shall be able to merit it at some future time."

TOAST: *Educational Demands of the Healing Art.*

Provost Wm. Pepper, in responding, expressed his thanks to the committee for the privilege of hearing the statement, most interesting and important, made by our distinguished guest. He then desired to call attention to several subjects from the stand-point which he naturally would consider them, and then remarked:

"I think we can take credit to ourselves in this country,—and in this city particularly,—for the pioneer way in which we frankly recognized the dental profession as an integral part of the great medical profession, the dental practitioner as the colleague of the medical practitioner. In this way we contribute powerfully to promote dental science, to strengthen dental institutions, and to encourage dental practices in the presence of a certain prejudice which the younger men present will scarcely appreciate, but which we older men can remember. I am glad to be allowed to speak on this subject, as being connected with an institution that I am proud to say was prompt to act in this matter. There is no department of the University of Pennsylvania to-day which is regarded by the authorities of that institution—I may say by the community—with greater interest and more worthy pride, none in which the character of the work is more earnest, thorough, and

good, in which the standard is more steadily maintained, is higher, and the determination to carry the grade of work to the highest attainable point is more settled and energetic, than in the dental department.

"The 'Educational Demands of the Healing Art,' as it impresses the general practitioner and the specialist, is no doubt a difficult subject. The requirements are becoming higher. I think we all recognize in this country that it is not so much that we have not a high standard, as it is that the conditions under which we have been living for the past century have been inimical to it. In this country, where the conditions are favorable for embodying our ideas in practical form, we find medical men and dentists, and all classes of scientists, are earnest in seeking to establish the highest grade of education that is within their reach. The dental specialty was started in America and placed upon so high a position that the world has been obliged to be its imitators. But, from what we have heard from Professor Miller it seems clear that unless we realize that our educational requirements in the healing art are high and exacting, we shall not, in this specialty, maintain our pre-eminence. We may be sure that the same thorough spirit which has made German medical education an exemplar of all medical institutions of the world, will be applied to the dental specialty, and unless we practitioners in America insist that our educational requirements shall be increased as the capacity of our students coming to us is higher, and better fitted to receive this knowledge, we shall find that in the few points where we have had precedence, we shall begin to lag behind. I feel confident, so strongly have we grasped that truth, the time is fast approaching when we are going to establish our institutions upon a stronger basis and raise their standard.

"Is there not a thought suggested by our guest and the remarkable career he has pursued, and which would render such a career exceedingly difficult in this country? Is not one of the requirements most urgently needed for our education in this country the endowment of research, a position where men of ability could have their maintenance secured to enable them to devote part of their time to abstract study, a part of that time which is with us nearly wholly consumed in practical details? I do not pretend to draw inferences from so remarkable a person as our guest. There are certain persons whose energy and power of aiding themselves are so extraordinary that they accomplish results, although hampered with work, that the rest of men could not accomplish if they

devoted their whole time to it. There are three men around this board whose work I know well. Miller is one, Cope is another, and Wood is another, each a pioneer in the most difficult and abstruse subjects; men whose whole talents should have been devoted to the pursuit of these investigations, and yet not one of whom would have found in America, save in the employ of the government, any means to pursue work of this kind, nor do we see, except in a few places, much tendency to meet this endowment so much required. If our education in any branch is to keep pace with the movement of the times, with what is being done abroad, if we are to furnish our quota to this remarkable epoch, we must have practical men come in and apply their principles. If America is to have her share in this, if this educational standard is to be maintained, it is necessary that our institutions shall not only present the highest equipment, but that they shall demand the best teachers, masters of their respective branches, and that they shall possess an endowment which shall give maintenance and a secure home to scientists, men like our guest, who are able to see further and clearer into the difficult problems which are before us, to open paths in which we can walk securely. Unless we can insist on this in our country, America will fall behind. Thus it behooves us to hold high our standard, to be discontent with our past achievements, however fine they may have been, and not lose sight of the fact that when we have secured an advantage we must hold it, Remember that practical success is not of the highest importance; the demonstration of scientific truths constitutes the only real basis for future successful practical work.

"These requirements, Mr. Chairman, have occurred to me as I listened to the statement of Professor Miller, and I feel that we should carry away with us a determination to embody them in our educational work. I feel honored to be present here to-night, and to be able to express with my voice my congratulations of the world-wide reputation which our friend has obtained in a few years, and to wish him 'God-speed' and further triumphs in his researches."

TOAST: Modern Methods in General and Dental Surgery.

Professor W. W. Keen, in responding, said he should prefer in one language, as Dr. Wayland said a friend of his did "in seven, keep silence;" but he felt the necessity of expressing a word or two upon an occasion such as this. He then very wittily alluded to the work of Professor Miller in connection with micro-organisms,

and then remarked: "He also gives us another illustration that a man cannot know too much, not only in his own specialty, but also in many others which, apparently, are not allied to it. His earlier studies in chemistry, which were so complete, have been his handmaid in his investigations of dental caries, and had he not been an accomplished chemist he could not have performed the experiments he has done. Not only is he a chemist, but an exact observer, a bacteriologist, well versed in pathology, and an eminent dentist. This bacteriological study, and the other allied departments which he has laid under tribute, is precisely in the line of our advances in general study. Bacteriology has revolutionized the theory and practice of dental surgery, and this is an encouraging sign of the times, and is in line with that revolution whose story reads like a dream, and which has passed before our eyes in general surgery."

He then called attention to the advances made in dental surgery in the transplantation and reimplantation of teeth, with results as "gratifying to the patient as to the dentist. . . . The deformities of the mouth are now the playground of the dentist, in which he moulds and turns the jaw to suit the face."

"I cannot," he said, in closing, "too warmly express my own feeling of obligation, in many departments, to our dental brethren."

TOAST: The Relation of Modern Pathology to Dentistry.

Professor E. La Place spoke of the "deep appreciation of the kindness" that called upon him to respond to the toast, "The Relation of Modern Pathology to Dentistry." He did this with diffidence, but this disappeared "before the opportunity to pay tribute to a man who has ennobled his profession and honored his country in foreign lands, demonstrating, as he has done, the truth of the relation of modern pathology to scientific dentistry."

"Thirty years ago there worked a giant intellect in a small laboratory in Paris. There Pasteur, with the world of science against him, discovered the influence of micro-organisms upon organic matter. Then he demonstrated that the true nature of fermentation and putrefaction was due to the influence of micro-organisms. Lister's practical mind used the methods of Pasteur for the elimination of bacteria, and gave to the world the blessing known as antiseptic surgery. There are processes of putrefaction in the mouth due to the invasion of particles of food by micro-organic growth, producing a corrosive substance that gradually impairs the enamel and destroys the dentine. To the honor of Professor Miller be it said, he was the first to pay attention to this

process, and to discover the fact that the cause was lactic acid, and which, joined with the lime, produces lactate of lime."

In closing, he said, "There is the science and there is the art of dentistry, and he is the most eminent who, through a full measure of science, has acquired the highest development of the art. Therefore, Professor Miller, that your life-work should find its crown of glory, let us drink, while every goblet foams, the wish that dentistry, now raised to the dignity of a science, may soon enter the same career as her sister specialty, and work under that banner of medicine whose motto is 'the alleviation of human suffering.'"

TOAST: *The Bond of Union between Dentistry and Medicine.*

Professor Harrison Allen remarked, in allusion to those of the President, "I began my career as a dentist, but the charms of medicine soon lured me away, but in after years I was again in a position particularly congenial to me,—that of teaching anatomy to dental students at the Philadelphia Dental College." He then alluded to a valedictory in which he criticised dentists and their work in the line of investigation, and presumed that the irritation that this caused had been forgotten, from the fact that he was called upon to speak to the toast, "The Bond of Union between Dentistry and Medicine." "What about this bond of union? It seems from this evening's proceedings there is no bond, because it is one thing. If there is no bond, there is no use talking about it; but if there is an idea that there is a bond, and that it unites two things, not entirely similar, it opens a subject not touched upon, and upon which I will not enter at length, even were I capable of doing it justice."

Dr. Allen then illustrated the union of Surgeon, Barber, and Dentist, by a sign he met with in a town in which he was a temporary resident during the summer, and closed his very interesting remarks as follows:

"While I have been sitting here I have been reflecting upon another subject,—the improvements in medicine. We, the English-speaking people, can claim much of this work. For example, the great Sydenham made the first scientific system of medicine, and I recall the anatomical and pathological studies in which Hunter stands first. Cannot we congratulate ourselves upon another fact when we come down to dentistry: we have one young Englishman—the younger Tomes—and Professor Miller on the continent to represent us. So many expressions have been and can be made to show that dentistry was at one time on a lower plane than medicine, but I think both sciences may be compared to a beleaguered

city awaiting supplies, or to the conundrum, 'Why is a beleaguered city like a new-born infant?' and you will remember the answer is that 'the long expected *succour* has at length arrived.'

The President called upon the chairman of the committee for some volunteer remarks.

Dr. Edw. C. Kirk.—"In responding to this call of the toast-master, I find myself confronted with a dilemma," and then quoted an anecdote illustrative of the fact that "all the best words had been picked out," leaving nothing for him to say. "I feel, however, that I should like to explain, on behalf of the committee, the gratification which they feel in having had an opportunity to present before an audience of this character a dental ideal towards which many of our profession are striving, an ideal which has been so largely realized in the work of our distinguished guest. Now, as it has not been spoken of definitely, I should like to call your attention to a short epitome of what that work has been. In the fall of 1877 he came to Philadelphia and matriculated at the Pennsylvania College of Dental Surgery, completing his course in the Dental Department of the University of Pennsylvania. Returning to Europe in 1879, he began the practice of dentistry, and at the same time pursued his studies at the University of Berlin. The result of his labors there were published in a series of papers, beginning with one on 'The Agency of Micro-Organisms in Caries of the Human Teeth,' published simultaneously in Kleb's *Archives*, and the *Dental Cosmos*. This was followed by some thirty communications in the same line of research, the most important of which are:

"1. A series of papers on 'Fermentation in the Human Mouth.'

"2. A series entitled 'Biological Studies on the Fungi of the Human Mouth.'

"3. 'Micro-Organisms of the Alimentary Tract.'

"4. 'Wörterbuch der Bacterien Kunde.'

"5. A larger work,—'Die Mikro-Organismen der Mundhöhle.'

"This latter work is now ready to appear in English. When his first thesis was published, in which was established the nature of dental caries, and in which he had proved to the point of demonstration the exact nature of the process, and while the dental profession of the two continents applauded and all were astonished, there were a few, however, who were not surprised. These were the men who had sat on the college benches with him, and were familiar with his qualities and methods of work while there. There is one peculiarity illustrated in his method of work which calls to the mind the evidence given in a certain murder case. The witness stated that

he was thirty-two feet eleven inches from the defendant when he fired the fatal shot. During the cross-examination the attorney said, 'Now, you have testified that you were thirty-two feet eleven inches away; how do you know that was the exact distance?' 'Because,' replied the witness, 'at the time I thought, perhaps, some fool might ask that question, so I went and measured it.' Now, Professor Miller has had from the beginning the habit of measuring things with accuracy and precision in his work, and it is this as much as anything which gives value to his results, which are not speculative in character, but thoroughly practical and clearly scientific, as has been so well shown in his work on dental caries. Now we feel we are not here to honor Dr. Miller in the ordinary sense, for a man with such a record needs no greater honor, but we are here to show our appreciation of his achievements. We appreciate him first as an American who has made a record in Europe, and compelled recognition in a city where intellectual advancement and learning are of the highest order; we appreciate and are grateful to him for the impetus which he has given to the cause of scientific dentistry, and there are not a few of us who feel proud that on the roster of the first class which went out from the Dental Department of the University of Pennsylvania stands the name of W. B. Miller, of Ohio."

Dr. H. C. Wood was called upon; but he declined at that late hour to add anything except to relate an anecdote illustrative of his position.

The happy introductions of the toast-master of the evening, Professor E. T. Darby, have necessarily been omitted in the report; but they added very much to the interest of the evening.

The Committee of Arrangement, upon whom the burden of this reception fell, and to whom great credit is due for the satisfactory results, are as follows: Edward C. Kirk, chairman; S. H. Guilford, Daniel Neall McQuillen, Alonzo Boice, John D. Thomas, secretary.

DEATHS FROM CHLOROFORM IN NEW SOUTH WALES.

PARTICULARS of deaths while under effects of chloroform in New South Wales, from the year 1885 to date:

| Date of death. | Date of inquest. | Name of deceased. | Age. | Locality of death. | Anæsthetic used. |
|------------------|------------------|-----------------------------|-------|---------------------------------|-----------------------|
| 1885.
June 17 | 1885.
June 18 | James Kelly | 27 | Gulgong Hos-
pital | Chloroform |
| July 30 | Aug. 1, 4 | Olivia Green | 37 | Sydney Hospital | Chloroform |
| 1886.
Feb. 16 | 1886.
Feb. 17 | Philip Norris | 18 | Albury Hospital | Chloroform |
| July 18 | July 18 | William Lan-
caster | 45-50 | St. Vincent's
Hospital | Chloroform |
| 1887.
March 5 | 1887.
March 7 | Walter Charles
Wagstaff | 33 | Sydney Hospital | Chloroform |
| April 28 | April 28 | Alexander De
Berg | ... | Wagga Hospital | Chloroform |
| May 10 | May 11 | George Merritt | 80 | Newcastle Hos-
pital | Chloroform |
| Aug. 22 | Aug. 23 | Mary Gilt | 36 | Sydney Hospital | Chloroform |
| Aug. 25 | Aug. 25 | John David
Rhodes | 35 | Goulburn Hos-
pital | Chloroform |
| Oct. 22 | Oct. 24 | Julia Constance
Campbell | 34 | Dr. R. Wood's
Hospital, Syd. | Chloroform |
| 1888.
Feb. 29 | 1888.
March 3 | Mary Ann Wil-
liams | 49 | Prince Alfred
Hospital | Chloroform |
| April 1 | April 3 | Lee Yum Kay | 54 | Sydney Hospital | A.-C.-E. mix-
ture |
| 1889.
Feb. 6 | 1889.
Feb. 8 | James Maxton | 30 | Prince Alfred
Hospital | Methylene |
| June 8 | June 5 | Charles Edward
Christian | 44 | Prince Alfred
Hospital | Chloroform |
| Nov. 19 | Nov. 22 | Henry Nutall | 37 | Gladesville Lu-
natic Asylum | Chloroform |
| 1890.
..... | 1890.
Jan. 8 | Peter Donnelly | 67 | Tamworth Hos-
pital | A.-C.-E. mix-
ture |
| Feb. 15 | Feb. 15 | Louis Smith | 22 | Albury Hospital | Chloroform |
| April 23 | April 24 | George Galvin | 14 | Prince Alfred
Hospital | Chloroform |
| May 15 | May 17 | Charles Segol | 27 | Prince Alfred
Hospital | Chloroform |
| May 19 | May 21 | Catherine Gol-
lan | 7 | Prince Alfred
Hospital | Chloroform |

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Original Communications.¹

FORMATIONS IN THE PULP-CAVITY.²

BY WM. P. COOKE, D.M.D.

THESE deposits have long been recognized. In 1780 and in 1835 the fact was spoken of; also by Tomes in 1846.

These formations may be classified as follows:

1. Secondary dentine,—normal.
2. Nodules attached to the wall of the pulp-cavity.
3. Nodules loose in the pulp cavity.
4. Calcifications, loose, easily distinguished from the others by their white chalky appearance.

The fact that dentine is deposited by the pulp as the teeth are worn down was recognized by Dr. John Hunter in 1800. The tubuli are continuous with the normal dentine, and have a similarity of arrangement in the dentine of repair, but in the loose and nodular formation there is no similarity of direction.

Cause.—The cause may be external or spontaneous. They were believed by Mr. Hulme to be caused by irritation set up by a decaying cavity, the deposit forming as long as the irritation is kept up.

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the American Academy of Dental Science, Boston, Mass., May 7, 1890.

The cause may be similar to the one which causes ligament to be changed to cartilage, cartilage to bone, the deposit in the coats of the arteries, the ossification of the cartilage of the ribs, and the deposits in the brain. Some may be caused by age; for others we rely upon a constitutional tendency. Syphilis and gout cause nodes in bones and possibly these formations in the teeth. When these are laid down there is an increased supply of blood, so any cause which produces this increase of blood-supply may favor the deposit, such as caries, recessions of the gums, or absorption of the alveolar process, by which means the pulp is more exposed to heat and cold; large metallic fillings, lack of occluding teeth, undue striking and irritation by clasps. Wedl thinks, while many old teeth have new formations, as all do not have them, the cause must be sought in an independent process which is not accompanied by pain. Chronic pericementitis may be a cause,—if on one root only, the deposit will be laid down in that root.

Effects.—The effect of these deposits is not wholly known. In some cases severe neuralgia is traceable to this source. In these cases the patient may have sharp lancinating pains, teeth very sensitive to thermal changes, also to excavation; itching and slight uneasiness at any time, a continuous boring pain in one spot, sensitiveness of enamel on scratching with finger-nails, slight external inflammation of gum, and soreness of the tooth to percussion. Wedl thinks that pain is not produced by calcifications until they are quite large. Cases are on record where several teeth have been removed at different times for the same patient, and the deposit found in each case was supposed to be the cause of the neuralgia. If in these cases we must extract, it is advised to first allay the pain, as the neuralgia is less liable to follow.

These deposits may have an important bearing in pulp-capping. Some writers claim that when the layer of odontoblasts have been destroyed, no new deposits of dentine will take place, but that we may expect that in a healthy pulp calcification will occur at the point of exposure.

Shape and location.—These deposits vary from a small speck, scarcely visible without a glass, to those that nearly fill the pulp-cavity. These are surrounded by a delicate membrane, which prevents their uniting with the wall of the pulp-chamber. This accounts for the difficulty we have in devitalizing such teeth, the application acting on a small portion of the membrane only. A touch upon the deposit causes pain by producing pressure on the live tissue on the other side of the deposit.

These calcifications are found in the bundles of connecting tissue and the sheaths of the blood-vessels.

Salter thinks the calcifications begin at different points, and at last pass into one mass. He also thinks the new deposit is at last fused and confounded with the dentine. If this were so, we would find the whole pulp-cavity filled, which we rarely, if ever, do. Many times the deposit is found at the mouth of the pulp-canal, and must be removed before the canal can be cleaned. When the deposit is loose this is comparatively easy, but when the canal is covered by one of these growths that comes from the wall of the pulp-chamber, especially from the point of bifurcation of the roots, it is not very clear which way we must cut to reach the canal. A case in point, where the deposit was drilled three-fourths through and then the pulp-chamber and remaining roots were filled, afterwards caused the removal of the tooth, and this might have been avoided by drilling a little farther, but caution forbade such a course. The largest deposit I have found in the molar teeth was in that class that have probably stood the shock of mastication for years; also in the dark-yellow teeth, many of which have been lost by Riggs's disease. With a little experience we may select from a number of teeth a majority which will have deposits in them. This refers to the dark-yellow dentine deposits, not to the calcification which appears to be in much younger teeth.

In one case of a lower wisdom tooth, where probably the decay had been rapid, and had progressed till the pulp was exposed, the whole of the pulp-chamber was filled with a white deposit, which was loose and had a membrane between it and the wall.

In the canines the apex of the pulp is most often ossified, but in many we find the small round nodules, which are in the substance of the pulp. Several may be present. They are deposited directly under a filling and seemed to be caused by it, though they may have been there before it was inserted.

The safe course in the treatment of devitalized teeth is to open well into the pulp-chamber, and by this means we may obtain access into the canals. In the majority of cases I think no trouble arises primarily from these deposits.

Frequency.—Salter claimed that every tooth had its pulp more or less ossified, and that it occurs oftener in the roots. Some claim it is more frequent in young persons, and in deciduous more than in permanent teeth.

I do not find this to be the case, but rather the reverse. It undoubtedly occurs more with chronic than with acute caries.

These deposits are not confined to humanity, as similar ones are found in the teeth of the deer, hare, pig, and walrus.

These deposits have no relation to the exostosed teeth. In the *Dental Cosmos*, vol: v. (1863-64) is the record of ten thousand teeth examined for exostosis, with the following results:

| | Per cent. |
|--|-----------|
| Carious teeth, 6200, exostosed 319 | 5 |
| Sound teeth, 8000, exostosed 85..... | 4 |
| Average exostosed..... | 4 |
| First, molar, in 4000, 210 exostosed | 5 |
| Second, bicuspid, in 2000, 94 exostosed..... | 4 |
| Third, incisors and canines, 250, 10 exostosed | 4 |

The greatest frequency is found in molars. Exostosis being caused by a constant, though slight, irritation to the pulp, and in this respect these deposits resemble it.

Some five years ago I commenced a series of investigations to determine the frequency of these deposits in human teeth. I have examined teeth collected in three different parts of the State and with the same results. The teeth, being dry, were cracked upon a small anvil and the contents of the pulp-chamber examined by a strong glass. Accurate records were kept as to soundness, decay, etc., and with the following results:

| | Teeth
examined. | Deposit. | Per cent. |
|-------------------------------|--------------------|----------|-----------|
| Incisors decayed..... | 521 | 28 | 5 |
| “ not decayed | 179 | 11 | 5 |
| | 700 | 39 | 5 |
| Bicuspid, decayed..... | 589 | 29 | 5 |
| “ not decayed | 161 | 7 | 4 |
| | 700 | 36 | 5 |
| Cuspid, decayed | 140 | 10 | 9 |
| “ not decayed | 160 | 81 | 19 |
| | 800 | 41 | 13 |
| Superior molars decayed..... | 1054 | 298 | 27 |
| “ “ not decayed | 551 | 191 | 34 |
| | 1605 | 484 | 30 |
| Inferior molars decayed | 1089 | 297 | 27 |
| “ “ not decayed..... | 606 | 145 | 23 |
| | 1695 | 442 | 26 |

RECAPITULATION.

| | Total
examined. | Deposit. | Average
per cent. |
|------------------|--------------------|------------|----------------------|
| Molars..... | 3800 | 926 | 28 |
| Incisors | 700 | 89 | 5 |
| Bicuspsids | 700 | 86 | 5 |
| Cuspids | 800 | 41 | 18 |
| | <hr/> 5000 | <hr/> 1042 | |

THE TREATMENT OF PROXIMATE CAVITIES.¹

BY GEORGE HOWE WINKLER, M.D., D.D.S.

IN offering this paper upon the subject of the treatment of proximate surfaces of teeth before the Odontological Society, I fully comprehend that the fundamental principles therein contained are so thoroughly understood that I can only hope to excite interest by confining myself almost entirely to the details of my own methods, and in doing so I shall be as concise as possible. In the formation of proximal cavities in the incisors and cuspids, I generally conform to a plan somewhat similar to that advocated by Dr. Arthur, of forming V-shaped or self-cleansing spaces by cutting away the posterior proximal surfaces of the teeth to be operated upon and inserting what Dr. George S. Allan, in his recent paper upon this subject, named "face-fillings." Slight grooves should be made in the cervical walls, and slight under-cuts opposite where these cavities do not encroach upon or involve the cutting edges, in which cases the under-cuts should be made along the incisive edges, the front plate of enamel being left intact. This is my rule, and, while I deviate from it at times, owing to the exigencies of special cases, I consider it the best means of protecting these teeth for long periods of time from further decay. None of the objections urged to the cutting away of molars or bicuspsids in Arthur's method apply here, and by following this plan a display of gold is avoided, which is disfiguring, and the duty of that avoidance is in my estimation second only to the duty devolving in the preservation of the teeth themselves. Naturally, if a tooth is broken away,

¹ Read before the New York Odontological Society, October 21, 1890.

I restore the contour by building up with gold, or adjust a porcelain crown. I am a staunch advocate of preserving or restoring the contour of bicuspid and molars; in simple cavities, where space offers, filling flush with the tooth; in others where decay has destroyed the grinding surface, or it is necessary to approach a cavity by cutting away sound tooth-substance, the contour should invariably be restored. It is better that the filling should be top-heavy rather than provided with insufficient material. In that case the anchorage is extended more completely over the grinding surface, as is advocated by Dr. Parmly Brown. Usually it is better in proximate teeth to enter the carious cavity by cutting through the grinding surface; but in cases where decay has taken place near the gingival margins, with a strong body of enamel and dentine between it and the grinding surface, it is often advisable to drill into the decay through the buccal surface, running a tunnel, as it were, along the approximal, parallel with the decay, and so reach and arrest it. In the preparation of cavities the line of cleavage should generally be followed as nearly as possible, the edges of the cavity being very slightly rounded so as to allow the filling to lap over them rather than the reverse. Retaining pits should never be used in these locations, nor, in fact, in any others except where cast fillings are employed. They are unnecessary in my method of operating. In their place slight grooves should be made in the cervical wall which cuts off the nutriment from so thin a layer of dentine and enamel rods that the overlapping filling at the bevelled edge of the cavity covers and protects a large proportion of them. Strong anchorage should be secured across the crowns, where the filling is made through the grinding surface, and slight under-cuts above and below where drifts are sent in from the buccal sides of the teeth. I fill all simple proximal cavities except in rare cases with non-cohesive foil, and never begin a contour filling with cohesive gold. Whenever it is necessary to contour a tooth, non-cohesive foil should be packed against the cervical wall, and the proximal cavity should be filled with it to within about a line of the grinding surface, where the palatine or lingual and buccal walls are intact, and as far as possible where one or both of these walls may be wanting. Cohesive foil is then welded to the already thoroughly condensed mass and the contour and grinding surface restored. In very soft bicuspid and molars, or where the cavity of decay has somewhat encroached upon the pulp, tin-foil should be used in place of non-cohesive gold. In lower molars, where the destruction of tooth-substance has extended quite to or

a little beneath the gum, it is frequently advantageous to fill the cavity partly up with copper amalgam and at a subsequent sitting to finish and polish this filling and then contour the tooth with gold. Dr. Gordon White, in the past year, has introduced copper foil for plugging against the cervical walls, and asserts, "It does not look pretty, but it saves the teeth." In contouring upper teeth I never use the rubber dam, because in my method of operating it is not needed, instead of which I use separators, wedges, matrices of various forms, and napkins, which I change during the operation as they dampen. In the treatment of proximate surfaces, where the progress of decay has nearly or quite exposed the pulp, it should be immediately extirpated, the roots filled, and the crown proceeded with as before. In the case of young persons, where the functions of the pulp have not been fulfilled, I cap each pulp with a mat of tin-foil and insert temporary fillings, which are frequently examined and renewed when necessary. In time, the patient having arrived at proper age, the temporary fillings may be replaced by permanent ones, the tin mats being still retained, or the pulps may be extirpated. To one who has never operated with tin-foil, or non-cohesive gold-foil in combination with cohesive, it would be impossible to satisfactorily explain the great value of this method. At least two-thirds of each cavity can be filled with the greatest facility and in the shortest time. The danger of bruising or crumbling the walls is avoided by the presence always of a comparatively thick pad of gold between the plugger and the fragile tooth. The tooth is relieved of the long-continued malleting required in an all-cohesive foil filling, both patient and operator are saved great fatigue, and, in the case of the former, sometimes utter exhaustion. A most perfect hermetic sealing of the cavity is also secured, and a surface for the final finishing is presented sufficiently durable for all practical purposes, and yet soft enough to enable the operator to readily make a perfect finish at the cervical wall. There is no danger of small flake-like particles overlapping the surface of the tooth beyond the filling and probably causing a renewal of decay. A remarkable strength of union is obtained between these foils by beginning the cohesive-foil work upon the thoroughly condensed non-cohesive with small pieces of gold hot from the lamp. Each piece of gold then is freshly annealed as used, and every instrument is warmed to drive off the condensed moisture of the air. The instruments with which I pack gold are all smooth. In plugging with non-cohesive foil I work on the mechanical principle of a dovetailed mortice, and with cohesive foil I depend entirely

upon its property of cohesion; never, under any circumstances, either depending upon or desiring the interdigitations made by serrated or sharp-pointed instruments.

Such, gentlemen, is a brief statement of my method of treatment of proximate surfaces, and while I am aware that the tenets I hold are opposed by many of our profession, I believe them to be the best. Non-cohesive and cohesive foil operations are distinct arts, both of which are beautiful in their perfection, but the intelligent combination of them must, in my opinion, ever remain more valuable than either. There exists in our profession, as in other medical specialties, a certain amount of scepticism in the presence of propositions which are contrary to pet theories and tried practices, and I expect that at least some portions of the above creed will be opposed with vigor. With thanks, gentlemen, for your kind attention, I have finished.

THE TREATMENT OF PROXIMATE SURFACES.¹

BY GEORGE A. WILSON, D.D.S.

To many of you it may seem presumptuous in me to attempt to offer a single new thought on the subject I have chosen for my paper this evening.

While I cannot hope and do not undertake to add much to what is known, I still think it is not too late to make it interesting.

Repetitions may therefore be pardonable if we review some of the laws that govern these operations and endeavor to see if they are understood and complied with.

I suppose it is because I so love the work and have lived in it so long that the question has become one of first importance. It is because I believe that to every conscientious worker it is a theme of ever-recurring interest; it is one which never fails to appeal to our best judgment and challenges our finest skill; it is one whereon the most proficient among us welcomes more light and knowledge in methods of treatment and the establishment of correct principles of practice.

To this end—viz., the firmer establishment of principles and ideal methods, and thoroughly practical as well—I would engage

¹ Read before the New York Odontological Society, October 21, 1890.

your thoughts this evening, for I believe the time has come when we should no longer be primarily seekers after the best ways of practice, but proficient workers on principles which are concurrent and coexisting with accepted truth and law.

The correct treatment of proximate surfaces in teeth brings us face to face with a very complex problem, but, like all much-mixed equations, we must first reduce it to a simple one.

In considering this matter I must perforce do so from a standpoint which twenty years' experience has proved to me to be the correct one.

Beginning as a disciple of contour work in the office of my honored preceptor, Dr. Atkinson, and having the advantages of the experience of such brilliant operators as Varney, Palmer, and Webb to aid me in my first researches after the best way, it is no wonder that I then and there espoused the newer system to which I have ever since given my unwavering allegiance. In fact, I may well consider myself fortunate in coming on to the stage of action just at that time and under so favorable circumstances, and perhaps do not deserve as much credit for steadfastness as many others whose chances, as students, were hedged in by meagre and, in many cases, adverse opportunities.

Aside from the fact that my whole professional life has been singly devoted to the development of this newer system, I have no plea to offer in support or defence of contour work as the correct principle. At this time it needs none. We are workers on accepted and well-grounded principles, having passed that time when theory and argument preceded and often defeated intelligent effort. The voice and work of the majority of the best men in the profession make a plea more convincing and eloquent than a Varney or a Webb could offer were they among us.

Were reasons asked by young men entering the profession why they should adopt this better way, first among them would be, it is in support of nature's plan: this plan, as manifest throughout the animal world, so far as the shaping and building of teeth is concerned,—leaving out that subsequent factor, decay,—is not to be questioned or improved upon. Their arrangement and adaptation for the work designed for them to do is as perfect as divine wisdom could make it.

Another reason is the inconsistency and futility of arraying our skill against the ravages of decay while we array ourselves against nature as well.

Decay and the causes of decay, perhaps arising from serious

infringement of the laws underlying the preservation and integrity of the teeth, come in, and here our work begins. The charm and fascination of feeling that everything one can do to prevent, arrest, and redeem the teeth from the ravages of decay and aid nature in restoring and sustaining her ideals may ever be counted upon as a most potent aid and inspiration. To feel one's self able to give back to suffering fellow-mortals what decay has robbed them of—comfort, consciousness of a wholeness and restoration of first forms and first unconsciousness of loss and pain—is certainly a high moral incentive for every dentist, young or old, to consider.

Hitherto, it seems to me that the contour system of filling teeth has been discussed far too much from the stand-point of restoration, while the equally important principle of prevention and the establishment of conditions which render subsequent attacks of decay far less liable to occur has been overlooked.

Claims for superiority in this particular over the old system have not been urged and maintained by our best writers on this subject as persistently or as justly as they have a right to do. Very many of the principles involved in a perfected system of dentistry, as applied to the natural teeth, have been but lightly touched upon. Obliteration of interproximate spaces, deranged occlusion, perfect lines of axis of the teeth, preservation of the perfect arch and consequent freedom from pressure on tissue around the teeth,—these are all matters which have received far less attention than the contour filling itself. Against this the bolts of the opposition have mainly been shot. The old system was open to all these dangers and invited them; the new anticipated and prevented them.

The fatality of making spaces between the teeth, as a rule of practice, is seen and known, and the practice, as Dr. Black tells us, has passed into practical oblivion among almost all of the best men in the profession. It is, and always was, an indulgence in easy and crude methods fraught, as every honest man knows, with a train of evils which he does not care to have brought to his door. Earnestness—even enthusiasm—in this matter need not constitute a plea for superiority, but rather looks to execution more perfect and methods reduced to harmony with natural and mechanical laws, better suited to cope with ever-varying conditions which make our work necessary.

Just here let me say that I am pleading for the adoption of better rules of practice, not speaking of individual and particular cases. I would not be understood as saying that strict contour work was in every case practical or feasible. Limitations and

environments of many kinds render this impossible in certain cases. I refer to that class of cases which invites the exercise of our best skill and puts no restrictions thereon. It is in this domain that I would seek to establish the highest standards.

Referring to recent literature on this subject, and notably the papers of Professor Black, Drs. Jack and Perry, we have the subject handled in a most masterly way. Dr. Perry, especially in his treating of the matter published in the *INTERNATIONAL DENTAL JOURNAL* of last year, evidently meant that there should not be anything left to be said. Certainly he has given us with charming candor—peculiar alone to him—the “logic” of his varied experience. No more cogent or conclusive argument need be asked for—were such a defence necessary—in support of the contour principle. First an enthusiastic contourist, then a lapse into the middle ages, a “dark period” of doubt and distress, but finally to emerge again into the light, one of the ablest exponents, both by word and deed, of the better way.

At the last anniversary of the First District Society of this city a paper was read by Dr. Allan, of this Society, and discussed by the representative men there present. As many of you may remember, that discussion was a very one-sided one and constituted as eloquent a plea as possible for the superiority of the new over the old system, theories, and methods. ‘Dr. Allan, in starting, said, “The bulk of the practice of the day is in the directions of face-fillings; the theory of the day is contour fillings.” Had this sentiment been uttered twenty-five years ago it would have better fitted the times. The sentiment expressed in that discussion showed most conclusively that the profession had outgrown those crude and gruesome methods. As Dr. Allan promises to be heard from again (and certainly needs to be, to set himself right) on this subject, I refrain from further criticism.

Referring to some mechanical principles which have aided me greatly in reproducing contour, I must go back and criticise Dr. Perry a little. I can find no mention in his paper of a principle that gold could be so inserted in a tooth as to strengthen the walls rather than weaken them.

Hitherto, those who have opposed this method have agreed that contour work weakened the tooth. I allow that in certain cases it may, but as a rule it need not, but, on the contrary, it can be so done as to strengthen and hold together very frail walls, relieving them of all strain, while the gold takes the wear and work. We may call it the bevel-edge principle.

Then Dr. Perry conveys the idea that enamel has great strength as seen in the "enamel rim," "the great arch," "the coronal arch," etc.; he would spare it, trust it to do what nature, in my judgment, never intended it to do. His argument here is, I think, misleading.

There is great strength and resisting power in enamel only when force is applied to it endwise. Nature so arranged those rods on teeth that from any direction assaults of an enemy were met endwise; reverse this law and flank it, attack it from its side, and it splits as easily as match-wood. Hence I say, as a cardinal principle, never trust enamel to hold gold or other metal; cut till you get anchorage into material which is built on a different plan and has holding power and strength; dentine, Dr. Perry's "great arch," as I understand it, forms the bridge over cavities in proximate surfaces where decay has not proceeded far enough to warrant cutting through from the grinding surfaces.

This class of fillings, where this arch was left, have, with me, been more productive of failures than larger ones where it was cut away. I have found that this bridge of enamel would give way sooner or later, and I would have to do what I should have done at first,—cut through from the grinding surface and into the fissure as well, perhaps.

Dr. Perry also tells us that "enamel does not coalesce in the fissures." How, then, can it be of much service in binding the cusps together? The dovetail or opposing-point principle in shaping cavities to hold gold rather than retaining pits,—anchorage into dentine,—and, when practical or necessary for future strength, bringing the gold over into the fissures and grinding surface, forming a knee-shaped filling which relieves the proximate walls of all strain, and bevelling these edges to prevent their escape, —as the jeweller his diamond,—are some of the principles upon which contour work can be successfully done.

There is another important thing to consider in beginning and ending an operation of the proximo-contour character, and that is, first, to note the conditions and positions of those parts of teeth affected by caries; and, last, that when the work is completed a new set of conditions is established, new relations of the parts subject to decay, and free margins which can be examined easily and quickly.

If enamel must be left at the cervical border, trim it smoothly, slightly round or bevel the edge, and place and pack the first pieces of soft gold with hand pressure. No malleting is allowable here

until a thickness of gold sufficient to protect the thin rim of enamel from fracture by the mallet is secured.

Dr. Perry speaks of the "matrix" as an adjunct to perfect contour filling, but, as I am pleased to see, with evident misgiving.

Does the artist need a stencil-plate for his beautiful fresco and decoration? the sculptor a mould into which to press his clay for a model of the form which is to follow? No. The true artist who rebuilds and restores the forms of teeth needs only the trained eye and skilled hand.

There is one prime necessity,—a dentist should be born such. As Oliver Wendell Holmes would tell us, he must have the cumulative qualities of four generations of mechanics concentrated within himself, and out of this wealth of endowment he can formulate a code of dental mechanics without great study or need of imitation. The true artist does not depend on the work of others for his models or inspirations. He may use appliances and methods in pursuing his work which others have found to be good, but he accepts their use because they fall in line and come within the scope of his own work.

In conclusion, let me say just a word in honor of the men who, for half a century or more, have lived in the light and helped others to grow towards the sunshine, and who honor us with their presence to-night,—Drs. Atkinson and Dwinelle.

As Dr. Perry has so eloquently put it, let us all congratulate them that they have lived not only to see the "irresistible tide of ripened professional judgment" setting in their direction, but rising and swelling about them and bearing them on with ever-increasing honors to and beyond the end of their earthly career.

Let us be proud of and enjoy them while we may, as our beloved masters and teachers, workers ever and always in establishing the highest standards, and never content until attained. Well may they be proud for their part in building up a system of dentistry, which, "built upon the needs of human kind, will endure while those needs last."

THE COMBINATION OF TIN AND GOLD AS A FILLING-MATERIAL.¹

BY DR. H. F. HAMILTON.

WHEN Dr. Charles H. Abbott, son of the late Dr. Frank Abbott, of Berlin, was in this city some years ago, he told me of the value of tin and gold as a filling-material, and asked me to try it, but did not go into particulars as to its special advantages or methods of working. At that time, in weak teeth of adults and in children's teeth, I was using tin, either foil or Robinson's metal, to some extent, and in some doubtful cases, instead of these, I tried the tin-gold according to my own ideas as to how it should be used. From time to time I saw these fillings; and their appearance encouraged me to more extensive use, until now I fill several cavities each day with it. I am led to speak of it to-night, not to claim any ideas or methods, but simply to call your attention to it and ask you to give it a trial. I use it where formerly I should have used cement and gutta-percha, and not in cavities where gold will stand, except those in the crown of the upper wisdom teeth.

In all my work with tin-gold I have seen decay come only twice, which meant undoubtedly defective work. I was very clumsy in my earlier efforts, not having had such a knowledge of the working of soft gold as many of you have, and from that reason two or three fillings came out piece by piece; but continued practice soon remedied that, and now I find tin-gold to be as easy and sure to work as gutta-percha. The theory and advantages of this method are admirably set out by Dr. Miller in the May, 1889, number of the *Dental Cosmos*, and his article will tell you far more than I can of my own knowledge.

I use it chiefly in crown cavities in molars for young persons and the wisdom teeth of adults; in small approximal cavities back of the cuspid for all ages, and in nearly all buccal and palatal cavities. I never put in a gold filling of any size in an approximal cavity in the bicuspid or molars without a few pieces of tin-gold at the cervical wall. I often fill two-thirds of the cavity with tin-gold and then build on a grinding surface with crystal gold or

¹ Read at a meeting of the American Academy of Dental Science, May 7, 1890.

annealed cylinders. I top the tin-gold out with gold in this way for appearance' sake, and I also feel surer of my contour; although with more experience I should have no fear of the latter not being perfect.

I use it with wedge-shaped soft-foil pluggers, and prepare it for each cavity by rolling a part of a sheet of tin inside the same proportional part of a sheet of gold and cutting it off so as to leave the pieces diamond-shaped. There is a foil-trimmer that belongs with the Harvard set of pluggers that I find very useful in condensing.

I will read a few extracts from Dr. Miller's paper, and in conclusion ask you to try tin-gold. I feel that it has made life easier and my work much more satisfactory to myself.

FROM ANOTHER STAND-POINT.¹

BY DR. J. ALLEN OSMAN, NEWARK, N. J.

FROUDE says, "The best we can do for one another is to exchange our thoughts freely, and that, after all, is but little." And I presume that no two persons can see the same thing in exactly the same light, even if viewed from the same stand-point; and it naturally follows that, from a different point of view, there will be a marked contrast in the ideas suggested.

Again, no two persons can have the same group of faculties developed in the same degree. For instance, an artist and engineer standing together, looking over the same scene, will have different impressions, although they view the same identical object. To the engineer the country presents itself in its practical aspect, and he sees, perhaps, a possible line of railroad, how to utilize some stream for a factory site, or the place to build a bridge; while the artist, of a more poetic nature, perceives the lights and shadows, the blending of vale and hill, tree and stream, and immediately conceives a picture of surpassing beauty. Hence our natural inclinations, our pet theories, or self-interest will warp our judgments and sway our imagination to such a degree that the results of our investigations will be far different.

It is well that this is so. Otherwise there would be but little

¹ Read before the New Jersey State Dental Society, July 16, 1890.

progress. If I were a minister, I should say that my text was "From Another Stand-Point," my theme "Dental Education," not, however, from the same stand-point of very many of the articles and discussions that have appeared from time to time, which have had for a central thought, raising the standard of qualification for entrance both to the college and the profession.

This subject has been so ably discussed in the past that there is but little to add; and yet I cannot pass the matter without alluding to one fact, and that is, while there has been marked attention paid to theory, perhaps the more practical has not received the attention it should.

There are certain mechanical laws that are immutable; they know no deviation, whether you apply them in building a bridge, erecting a building, constructing a locomotive, filling a tooth, or making and adjusting a denture,—in other words, the training of the eye and hand in mechanics.

This fact has been noticed by other members of the profession. I will cite two instances in support of my statement.

Once, while speaking to a gentleman in regard to an assistant he had just employed, on asking how he liked him, he replied, "He is a thorough gentleman, educated, and passed a brilliant examination; but, unfortunately, he doesn't know much about dentistry." He did not mean theoretically, oh, no; but practically. In other words, he was head-wise and not hand-wise.

This is about the experience of Dr. Shepard, president of the Massachusetts Board of Registration in Dentistry. In a paper read before the First District Dental Society of New York, and published in the *Dental Cosmos* of February, 1890, page 97, he uses this language: "And it may not be out of place for me here to make the confession that the certificate has, in some cases, been granted to graduates with great reluctance and mental reservation, and on account of considerations which were honorable, and of force to affect the decision of the Board; but which, we are convinced, should not in the future have the weight which they have had in the past;" and again, on page 99, I quote him as expressing the thought which I am endeavoring to bring out: "Dentistry, more than most vocations, forms a connecting link between the professions and trades, and must, in its highest development, exemplify each." In so far as its aims are benevolent, its investigations and studies confined to vital organs and functions, and its culture broad, liberal, and scientific, it is a profession. In so far as it deals with practical and mechanical operations, with the

training of the hand to execute, and in much of the daily routine of the office, it is an art or trade. It approximates one or the other as it meets these tests; and I am sure that neither can be left out of the fully-rounded dentist. But I am as fully convinced that a knowledge and skill that will execute in a workman-like manner the various operations he is daily called upon to perform, is as essential, at least, as a knowledge of the metacarpal bones or the quadriceps extensors; and if he lack the former qualification he certainly will be a failure as a dentist, even if he possesses to a high degree the latter acquirement.

This, from the stand-point I am now occupying, seems one of the reforms called for in our education of dentists.

However, there is another duty for dentists to perform,—the dental education of the masses, the busy people. How to reach them, how to elevate them to a proper appreciation of the efforts put forth by the dental profession, for the correction of evils resulting from perverted nature and their own carelessness and ignorance concerning dental matters, is, I take it, a question worthy of our attention.

All operators will admit that the more intelligent the patient, all other things being equal, the greater and more satisfactory the results of the operation will be. I refer, of course, to dental intelligence; for it is well known that intelligence, education, and refinement along other lines have no correspondence with dental knowledge, for we have often found the most intelligent and well-informed persons in other respects woefully deficient in this direction. And this could hardly be otherwise when we consider how meagre the popular instruction has been in these matters; not but what the dentist would gladly answer any questions in this direction, but the nature of his work, requiring the closest attention, and the fact that his day only lasts while daylight is with him, prevents much instruction which would be gladly given if it were otherwise.

In many other arts and sciences there is a vast amount of popular instruction shed abroad by the press, both daily and weekly, secular and religious. Take, for instance, electricity. How much has been written on this subject! and there is scarcely an intelligent person but what has a fair idea of the wonderful inventions of various kinds that have been brought out; and while they are not electricians, they are in an appreciative mood to receive all that can come from these devices. Or, how often, in the press, do you see short pithy articles calling attention to the care of the eyes or

ears, to diet, or the beneficial results of exercise and bathing, the importance of sleep, hygiene in its various manifestations, and, in fact, to a number of the ills that flesh is heir to!

It does not necessarily follow that a person can become his own physician, but it makes the patient a co-laborer to the common end of recovery, should he have any of these diseases.

But it is a rare thing to see any reference to the care of the teeth and the hygiene of the mouth. Is it because the dental profession is barren of knowledge that the people ought to have? I think not.

There has been some realization of this need, and a few efforts have been made to meet the demand, but it has been inadequate; some from not having been put in proper shape, and some from being too lengthy and cumbersome. The day of long, dry essays has gone by. The people are too busy. A book of twenty-five or fifty pages, or more, will in many cases lie on the shelf and become covered with dust. What is said must be put in a few words and in a palatable form. How can this be done?

Dental societies—State societies in particular—have an office to fulfil besides the one of mutual helpfulness, the discussion of technical and scientific subjects pertaining to their vocation. They must be the educators of the public.

They have, in a large measure, been on the alert to prohibit incompetent persons from inflicting the results of their ignorance on the public, and to the various State societies we owe the restrictive laws that are now in force in so many of the States; and while many of them are defective, some, perhaps, being too strict, others not enough so, time will probably bring about a law in all the States that shall be alike in its requirements and its penalties. Until this is done there is a weakness in dental legislation.

All this, however, has been along the line of self-preservation. There is a wider and higher mission for us to fulfil ere the harvest is ripe.

If it be true that people perish for lack of knowledge, it is equally true that people suffer misfortune and misery from the lack of dental knowledge; and it is a high and honorable opportunity that should be improved in scattering abroad among the masses such knowledge as will be of benefit to them. To prove that the public is hungry for such matters, I will mention an instance in our own city.

Some months ago one or, at most, two articles were printed in one of our papers giving a brief history of the advantages of the

deposit plate; and to this day persons speak of it, asking about its merits, etc. "Straws show how the current tends."

As an example, if Dr. ———, located in a city or large town where two or more dentists were in practice, should interest himself and issue a pamphlet, or take occasion to deliver a few lectures in the schools before the scholars on the care of the mouth and teeth, he would at once arouse jealousies and bring down upon his head criticisms that would not be pleasant to bear.

If this picture is not overdrawn, then there is a field for dental societies; for any such step taken by and under the authority of such societies, with the absence of all names, would have greater weight. We need writers to prepare short and pithy articles on dental matters for the press.

The press is always ready and anxious to diffuse knowledge, but does not care for long and dry articles.

Then, again, the public should receive instruction in the hygiene of the mouth,—that cleanliness is indeed next to godliness. There are many things inherited from ancestors besides hereditary diseases, one of which is the neglect to realize the importance of frequent cleansing of the teeth, and perhaps a little knowledge in this direction will also tend to stir up some members of the dental profession. I had a patient the other day who informed me that his former dentist did not believe in removing tartar from the teeth, and said it was an unnecessary operation; that it insured them from decay.

Also, dentistry has passed the line where it is to be regarded as a luxury. It has become a necessity. Why do we not hear of the great expense of clothing, shoes, etc.? Because the people are educated that these things must be had, and they are replenished, when needed, in such manner as the funds will allow, and it must be so with the care of the teeth, and when the lesson is learned, and frequent examinations are made, then will people commence to realize the great benefits that dentistry is continually bestowing.

Another point that can be brought out with benefit to all concerned. It behooves the public to beware of that professional man who habitually absents himself from dental societies and from all the avenues of information. The stream never rises higher than its source, and when the source is low, then we cannot expect much. In other words, as Dr. Atkinson would say, the people must learn to differentiate; and if the lesson is learned, it will do as much to elevate the dental profession as any other one thing can possibly

do; for the more intelligent the congregation the higher the acquirements of the preacher must be to serve them.

This law holds good in our profession as in the other. I do not think it is in the province of this paper to outline the details of what should be taught, or rather illuminated by the press, only perhaps to say in this connection that good results will be obtained by some method that brings it before the grammar department of the schools.

Psychologists tell us that when men and women pass a certain age, they fail to grasp new ideas; and then, again, to wait until adult life is to have the mischief accomplished. How much better results could be obtained, and how much more the services of the dentist would be appreciated if the masses of the people had only a glimmer of light on such things as are of daily practice; that it is not necessary to extract a tooth because it has had a so-called gumboil; that a tooth can ache when the "nerve is killed;" that the molar teeth do not come in again when taken out; that children do have teeth when they have not had others taken out; that a double row of teeth is not necessarily a "freak of nature." But why prolong the enumeration of these things? They suggest themselves to our minds.

Then again, what a field for enlightenment in the direction of the relation that should exist between the profession and the patient. The time is now ripe for a consultation fee, for many an hour is wasted by persons coming into a dental office and calling the dentist from his chair, for examination and consultation regarding what is best to be done. Perhaps it is a case of regulating; and when the advice is given, and the patient gone, a half-hour has been given away. This is simply because it is not customary for dentists to charge for such advice. Our brother physicians would receive a fee for such service, and it would be expected that he would.

There is not enough publicity given to the proceedings of the dental societies. They are, it is true, published for the education and profit of the profession; but there is much that ought to be wide-spread among the laity, and there is no one that is as capable of doing this as the different dental editors. They ought to have the experience to know what to give out and what to retain, and the dissemination of such facts as the wonderful advances made in the treatment and preservation of the teeth, the various methods of replacement now in vogue, the merits and elements of the various kinds of filling, what can be expected from pulpless teeth, and an

infinite number of subjects would, if thoroughly understood, make the patient an appreciative one, and take better care of their own mouth and their children's.

I believe one thing thoroughly, that when trying to get the people to absorb matters of this kind, one subject only should be brought to notice at any one time, for when a number are treated the force is lost and the lesson is not remembered; hence my plea for the short, terse, and pithy articles for the press.

I will not trespass on your time and patience longer, but I feel that there is indeed a wide and inviting field in this direction, and that the public should have more light in these matters, and I as firmly believe that no profession has put forth greater efforts, nor has any profession reason to feel more gratified over its transcendent achievements.

I also realize that efforts put forth in educating the masses will be like the sower in the parable. Some seed will fall by the wayside and some be doomed by selfishness and forgetfulness; and then, too, some will be like "bread cast upon the waters," and after many days it will return.

Reports of Society Meetings.

AMERICAN DENTAL ASSOCIATION.—THIRTIETH ANNUAL MEETING, EXCELSIOR SPRINGS, MO., AUGUST 5 TO 8, 1890.

(Continued from page 685.)

CHAIRMAN PEIRCE then announced that the papers of Section Two were ready for discussion.

The following resolution was introduced and adopted :

Resolved, That the American Dental Association is in favor of the unification of the dental laws of the various States, and that a committee of five shall be appointed by the President to report a plan at the next meeting.

Dr. Crouse, of Chicago, said that he was getting tired of the introduction of resolutions. He thought that something should be done besides the mere adoption of a resolve to do; we should act.

Dr. Sudduth, of Minneapolis, Minn., and Dr. Gardiner, of Chicago, favored the appointment of the committee, and held that it was the proper mode of getting the matter before the Association, and the only way of accomplishing anything.

Continuing the discussion of the papers, Dr. Noble, of Washington, stated that he had been especially interested in the subject of the uniformity of laws. If the Association were a State he thought there would be no trouble of securing uniformity. But there are political units recognized in the United States Constitution, and the result has been the establishment of a great variety of dental enactments. What is wanted is the best possible under the circumstances. It has been found an infinite task to select the best from those of the various States. Some of the dentists in the District of Columbia have been working for years to determine this and the proper methods of getting a law adopted by Congress. The one finally adopted by the local dental association has just passed the Senate, but it is not yet through the House. If any members of the Association have any influence with the members of Congress from different sections of the country, it is to be hoped that they will help the dentists at Washington in this respect. We have been standing at the elbows of the members of Congress and petition-

ing them for years. Sometimes we have succeeded in getting the law through one House, sometimes through the other. Senator McMillan, of Michigan, a few days ago assured me that we would not have any further trouble with the Senate, and all of our energies should now be concentrated upon the House. The best way to secure uniformity of laws is to have a National Board. The point that has given us the most trouble in the city of Washington was, whether the college degree should be recognized in the granting of certificates. There has been one decision against the dental law and against the action of the Dental Board in the State of New Hampshire, and there is trouble ahead for us in every direction. We have no right to discriminate against any schools, but it is important to us that our dental degrees and our dental laws should be made uniform.

Dr. Alport, of Chicago, inquired as to the nature of the dental law proposed at Washington for the District of Columbia.

In reply, Dr. Noble said, The law requires all applicants to go before a Board of Examiners to obtain a certificate allowing them to practise.

I have followed this association ever since the first meeting at White Sulphur Springs. We ought to do something to increase the usefulness of this society. We ought to attract representatives here from every State. We ought to improve our methods of work. We ought to encourage the delegates to examine into improved mechanical appliances. We ought to keep abreast of the advanced thought of the day. We want to find out everything that has been accomplished the past year all over this broad land. We want the essence of the work. We want everything that is new and true and good. We want more advanced scientific thought. That alone will help us on in our work.

Dr. Brown, of New York.—The question of the unification of the laws is an important one. I have been telling at home and abroad that the American Dental Association is ahead of everything else in its work on the globe. Is there such a thing as uniformity of laws? No. I couldn't go across to New Jersey and practise without first being examined for a certificate. I would have no right to practise there beside students that I have taken from the gutter.

A Voice.—Who are the students that you have taken from the gutter?

Dr. Brown.—Mr. President, I can give you the names of nine students that I have rescued from the gutter. Yet I must go before a

State Board before I can practise in New Jersey. Yet what is it all worth? I can take my little boy nine years of age and coach him, and he can ask questions that all of the Boards in the country cannot answer. For the State of New Jersey to say that a doctor from New York City, no matter what his reputation is, cannot cross the Hudson River and practise there, even among patients that have consulted him in New York, is to put a premium upon incompetency. The laws of the State of New Jersey were made to keep reputable physicians out of that section of the country.

Dr. Stockton, of Newark, N. J.—For all time, dentists, lawyers, and philanthropists have been trying to get uniform laws of marriage. In New Jersey we may perhaps be a little lenient for the women, but we are hard enough on the men. It would probably take more than five years to get uniform laws to regulate the practice of dentistry through all of the State legislatures. Those of you who have had any experience in matters of legislation will bear out the truth of this assertion. It is just as Mr. Blaine has explained in matters of this kind. The members of Congress from different sections of the country have different ideas upon the same subjects. Some of the members think that some one article should be protected no matter how disastrous the result may be to another section. In justice to my own State of New Jersey, I will state that the law requires that we must have a Board of Examiners. Then they attempted to pass a State law establishing a State degree. Fortunately for New Jersey, fortunately for dentistry, that law did not pass. Dr. Brown would have no trouble in complying with the requirements of the State Boards of New Jersey. But the State law as it stands was passed to keep bad men out, not good men. It was passed in order that men coming from the colleges and not yet qualified to practise dentistry may be given more time to study at the schools. That law doesn't refer to Dr. Brown or Dr. Atkinson. It refers to men who are not familiar with the theories and not skilled in the practice of dentistry. I knew a young man who passed "100," and was rated A No. 1 in the school from which he graduated, who went into a dentist's office. The first thing that he was asked to do was to repair an ordinary rubber plate that came into the office, and he didn't know enough to put in a cuspid tooth. The simplest thing in dentistry! This law will work well in the long run. There is scarcely an association in the country that stands higher than the New Jersey Association. In the meetings of the State society, during the last two years, we have taken what I believe to be au-

other step in advance. We require the papers to be presented to the State association to be in the hands of the secretary three months in advance. These papers are then exchanged and placed in the hands of competent critics, and essays and criticisms are then read before the association. For this reason our meetings are not mass-meetings.

Dr. A. W. Smith, of Kentucky.—I am in favor of as little legislation as possible. We should draw the line of demarcation between the true dentists and the poor ones who are dentists for revenue only. This we can do without a long preamble, and we are likely to reach results far sooner. Now, in regard to dentists attending the meetings of the associations, I think that the local societies ought to pay the expenses of the delegates. It is no more than justice. It is too much to ask the delegates to give up their practice, and pay their railroad fares and expenses for a week or more. All this time the Shylocks of the profession, who are ever eager for their pound of flesh, are in their offices taking away the practice of the delegates. The general public is ever ready to complain if the dentists cannot be found at their offices day and night.

Dr. Crawford, of Tennessee.—The question for us to consider is whether the aggregated results to the whole people of all this turmoil, work, and worry have resulted in any essential benefit. Not to the dental profession, *per se*, but to the public at large. In my humble opinion there is little difference between the States that have laws and the States that have no laws. The most effective laws must be simple and easily understood. I was for eight years on a committee trying to get the legislature of the State of Tennessee to adopt dental laws framed by our dental association. Every law that stands must be built upon a principle of right. Your institutions must then be right everywhere. If we have a uniform dental law, we must have a law that is right. We might learn something from the legal profession. Let a young man from the mountains study hard and work to secure a proficient education in the law, and let him be admitted to the bar, and he is recognized by the court and by the profession just as though he had been the graduate of the greatest law school in the land. I assert that we ought to take every young man by the hand who can secure a license from our State Boards, and we ought to lift them up instead of trying to drag them down. Let our laws be equitable, be just, be courteous. How many of the members of this Association could pass a seventy-five per cent. examination to-day?

It is in the violation of the code of ethics that we find our greatest difficulty. Show me a man who extracts teeth for twenty-five cents, and I will show you a man who is not worthy of the name of dentist. Talk about dental education! Let us educate the members of the profession to do right. The fear has been expressed that we are in danger of being overrun by young dentists. It has been said that we have too many dentists. Never! You can never get too many good dentists, and the poor dentists will be forced out by the law of the survival of the fittest. America can make better dentists in three years than can be found in any other nation in ten years. It was this facility in the application of knowledge to the practical purposes of life that caused Gladstone to say to Europe, "America will pass you in a canter." We must look to results and not to laws. The true dentist is the man who does his work in the best manner, no matter what schools he attended or where he secured his knowledge of the profession.

Dr. Story, of Texas.—The American Dental Association has taken the right stand in this matter. Our State has been the dumping ground of the country for a quarter of a century. There is an unwritten tradition there that no man can make a law who puts on a boiled shirt twice a week. In Texas there are forty-seven judicial districts, and the law requires that each district should have three reputable dentists as an Examining Board. I will venture to say that there are not half three times forty-seven reputable dentists in the State of Texas. If we could have uniform dental laws it would be the grandest thing ever started by the American Dental Association. Nearly a thousand young men carried away certificates from the dental colleges of this country during the past year. That does not make dentists of them. Yet I would give but little for a diploma from an Examining Board when the members of the Board are often as ignorant as school-boys. In many instances the members of these Boards are appointed because of political preferment rather than because of scientific attainment. But we are making progress in the right direction. Let us have a dental congress of States. Let us see what we can do with the United States government. If a diploma means anything at all, it means that it is a passport. Care should be taken in the granting of certificates, and care should be taken to see that our dental colleges are all right. Time should not be a requisite to the granting of certificates. Knowledge should be the only requisite. Place the standard high. Give no man a certificate until he is competent, if he fails to obtain it until he is gray. There must,

however, be rules and regulations. The men with the big barn-door advertisements are too often looked upon as the great men of the profession, while the competent graduates of schools are working in the offices unknown to fame.

Dr. Goddard, of California.—Several years ago the National Board of Dental Examiners framed a law and sent it to the local societies in the different States. There can be no unification, since our ideas grow, and they do not grow uniformly. More is wanted in some States than in others. I can see no way of getting such a law except through Congress. The power of examination is with the State Board. Our experience in California has been peculiar. Our State Board seems to have confidence in the students, since they give licenses before the colleges give diplomas. Of nineteen men recently examined, nine passed. Two of these had been rejected by the colleges, and seven were in the colleges at the time of the examination.

Dr. Smith, of Colorado.—The discussion has been interesting. I am in favor of moral rather than legal suasion. Legal suasion is simply a check, it furnishes no improvement. Laws do not raise us in the standard of morality. I was among the first to advocate uniform laws, but I must confess that I have some misgivings as to the results. Turning to the papers presented last evening, I will say that I was very much interested in Dr. Atkinson's paper. It goes to the foundation of things. The paper of Dr. Thompson was good, but there was a tendency to lull us to sleep. Without a foundation our superstructure must fall. Closer attention to scientific papers should be our aim. As a class we are manipulative and not analytic. We are asked questions which we cannot answer. What causes decay? What causes pain? As we lift ourselves up, so we will attract others towards us. We know nothing of the duality of mankind. Yet we cannot educate men thoroughly without this knowledge. Come back to fundamental principles. Ascertain the cause of disease. Find out the causes of crumbling qualities and you can find the remedy. If we could live in harmony with the fundamental principles of life we should have no disease. Don't always keep within the curriculum of text-books. Sometimes get out towards the region of the unknown. Disease is inharmony. No substances will grow unless there is a positive and a negative force. There are substances for which we have no nomenclature. Yet all these substances are acted upon by the positive and negative forces of nature, and the result is growth and change. If we could analyze

these substances that we know so little about still further, we should find a multiplicity all essentially different. We know that combinations of these different substances produce different characteristics. The slightest apparent causes often produce widely different effects.

Here the speaker entered upon a lengthy explanation of chemical actions and affinities, illustrating his position by means of the black-board.

Dr. James Truman, of Pennsylvania.—The subject under discussion this morning is, to my mind, one of the very greatest importance. Certainly no other could claim the attention of this Association of more value. We are at the present time, in my judgment, in a transitional state. We are passing from the period without law to that when we are likely to be governed, and, in a measure, to be injured by law. The members of this profession must remember that there is danger in tampering too much with legal processes. There is a risk not only to this profession, but there is danger to the liberties of every individual in this country. Those of us who have had the iron enter our souls under the old effete governments of Europe, know very well what it means to be ground down by enactments; and law, necessarily, is as much of a monarch as the king on the throne. It is time for us to think of these things. I am not opposed individually to dental laws; but when they are as we have them, the request for their unification becomes imperative. If there is a law, as has been stated, in one State that requires of every individual—whether he be a graduate or whether he is not, whether he has been in practice twenty-five years or one—that he must go before a board of examiners, and pay a fee of twenty-five dollars for that examination before he can practise dentistry, it is time to call a halt in this matter. It will never do to take that position. Laws, as has been well stated here, are for the benefit of the people. When they become tyrannical, and insist upon having us do more than we can possibly attend to, then it is best they should be repealed. Having been an educator for many years, I am not prepared to assist in making it so difficult for students that they will be unable to enter the profession excepting they go through a course that will really be an injury to them.

What is the difference between the various modes of education? We are passing into another system of training the mind. We are obliged to accept the world as described by Dr. Thompson in his very able paper, which I cannot regard in the same light as viewed by Dr. Smith. The writer struck some profound principles in

educational matters. It is true we have had a great deal of didactic teaching. It is very true that professors may have repeatedly delivered lecture after lecture, year after year, from manuscripts as originally prepared; but that this is a wrong mode needs no argument. There never will be much accomplished by placing an iron partition, as a written lecture, between teacher and student. Every one fitted to train students should be able to stand before them and explain principles as he understands them; and if he is not capable of thus doing he is not prepared for the position he is called to occupy. Therefore every year makes, or should make, a change in educational methods. I believe the time is coming when, instead of didactic lectures, we will have practical demonstrations of scientific results, and that "mere talk," as it has been called, will be laid aside for the clinical demonstration. For more than a quarter of a century I have been a lecturer to students, and I am convinced that a more practical way is desirable, and would be welcomed by myself.

In reference to technicalities, there is a certain class of scientific men, and I have no criticisms to make against them, who, in their dealings with their special work, so overload the matter with technical terms that they can never be clearly understood even by those equally as advanced as themselves. To my mind, the one who is the best teacher is that one who reduces everything to the simplest terms, omitting, wherever possible, technicalities. I know very well that I have been subjected to criticism both in this country and in Europe for this position; but I believe it can be maintained that if you want to instruct students you must do it in the plainest way possible, bringing your work before them in the best English at your command. I think that this course should be followed in all our text-books.

The chairman of the section called attention to a work in preparation, a portion of the advanced sheets of which I have had the pleasure of reading. I allude to Dr. J. N. Farrar's work on regulating. I want to say just here that, in my opinion, dentistry has never before produced a work in that direction equal to it, and it will be many years before anything like it can be accomplished. It shows what one devoted man can do. He has given the last six years of his life to the subject, day and night, and the result, when issued, will be of incalculable benefit to the profession. Every dentist should have a copy of it without regard to cost.

It is the educational labor that is the important work of the period. We need not only more men to write, but we want more

to attend these meetings. What a paucity of members do we find here of a great profession, large as the meeting is. Some of us have come nearly half-way across the continent to take part in it, and I should have regretted it had anything prevented my being present. Conventions are the great educators.

Now, gentlemen, we want to be liberal. We do not wish to dogmatize. We do not desire to crush any one by law. We want a certain degree of freedom of action in our educational movements. Colleges are being constantly criticised, and the assertion is being made over and over that they turn out poor or unequal men. That is not the way to meet the subject. Give us your assistance and encouragement, and I am satisfied that within the next ten years you will see an advance along the whole line of dental colleges that will surprise every one in this profession.

Dr. Crouse, of Chicago, succeeded in having the rules suspended in order to make a brief plea for the Dental Protective Association. He said that this Association had saved the members of the profession at least half a million dollars. He reminded the members present of the royalties that would have gone to the International Crown Tooth Company but for the work of the Protective Association. Dr. Crouse said that he was not speculating in real estate, as reported by some of the manufacturers opposed to the work of the Protective Association. He denied that he was making any money out of the Association. Continuing, he said, I court investigation of the affairs of the society. I make the plea for the good of the members of the profession. I have sent out circulars explaining the work of the society, but this is not enough. Many of the members of the Association will not read circulars. This is why I ask for a few minutes of your time to-day. In this work every man must do his part. I enjoy the work because I know that it is a benefit to the profession. I hold the notes of a large number of dentists who are willing to pay but who cannot spare the money. The wrong, the injustice, is found in the fact that the Rubber Company got twelve million dollars out of the members of the profession.

Dr. Crawford, of Tennessee, moved that a committee of four be appointed, one from each grand division, to examine the accounts of the Dental Protective Association, and urged that the committee make a report either in favor of or against the Association.

Dr. Atkinson, of New York, then continued the discussion of the subject of education. He said, There is one thing that should be discussed, and that is how to get down to our work. The mem-

bers of this Association should pay a greater respect to each other, and to the subjects presented here. Many have been listless, and have not given the proper attention to the addresses as made. We notice that many really sharp and shrewd men pass these subjects by as unimportant, and not interesting. We need foundation principles so firmly fixed in our minds that they can be readily stated and formulated. We have a right to take it for granted that the men who are here are here to work. Let us give up the habit of shrugging our shoulders. This is true of all of us. Even in Europe, where they have made a close study of these questions the work of a lifetime, the brightest minds of the age all admit that they do not know too much.

The chairman then appointed, as the committee to examine the accounts of the Dental Protective Association, Dr. Goddard, of San Francisco, Cal.; Dr. Walker, of New York; Dr. Crawford, of Nashville, Tenn.; and Dr. Gardiner, of Chicago, Ill.

The following were named as the committee to consider the report of the president: Dr. Thompson, of Topeka, Kan.; Dr. Noble, of Washington, D.C.; Dr. Walker, of New York; Dr. Peirce, of Philadelphia.

(To be continued.)

NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society held its regular monthly meeting Tuesday evening, October 21, 1890, in the New York Academy of Medicine, No. 17 West Forty-third Street. The President, Dr. J. Morgan Howe, in the chair.

The President.—Since the last meeting of this Society, one of our oldest and most highly esteemed members has passed away. Dr. William A. Bronson, who died on the 20th of last August, had for many years been an honor to dentistry. He stood in the front rank by reason of his intellectual and manipulative ability, and his genial, kindly nature endeared him to all who knew him. It seems appropriate, and undoubtedly is the wish of the Society, to take some action in regard to our loss.

Dr. Lord.—I move you, Mr. President, that the Chair appoint a committee of three to draw suitable resolutions in regard to the death of Dr. Bronson.

The motion prevailed, and the president appointed as a special committee Drs. C. E. Francis, Charles Miller, and S. G. Perry.

The President.—I have to announce to the Society that, in accordance with the recommendation of the Executive Committee, whose report was adopted at the last regular meeting, the Chair has appointed a committee of this Society to confer with committees of other societies in relation to the proposition for the establishment of a Dental Club, such committee being composed of Drs. Bödecker, Carr, and Jarvie. The gentlemen named have been notified by the secretary of this Society of their appointment. It is hoped that the committee will meet with other committees that may be appointed by the other societies interested, and that we may hear from them later, not in the Society but through other channels.

Dr. Jarvie.—Who is to take the initiatory steps of such a meeting?

The President.—It would be very proper, I think, for the committee appointed from this Society to communicate the fact of that appointment to the other societies and request the appointment of committees to meet with them and confer together for the elaboration of a scheme of organization. The recommendation of our Executive Committee did not make any special provision for that, but I think it would be appropriate for our committee, as the first appointed, to make such a communication to the other societies.

I have received a letter from Dr. J. D. Miles, of Vicksburg, Miss., the purport of which is, that he wishes to present a gavel to the New York Odontological Society, as a token of the high esteem he has for the Society. This gavel is made of wood that has historic interest. It is made of a portion of the steamer "Star of the West," which carried Walker and his filibusters to Nicaragua. It was the first vessel chartered by the United States government in our recent civil war; it was the first vessel fired upon by the Confederates; and it was the first vessel in the service of the United States government captured by the Confederates. It was afterwards sunk, and has remained under water all these years; recently a part of it has been raised, and Dr. Miles has had this gavel made of a part of that wood.

On motion of Dr. Francis, the gavel was accepted with the thanks of the Society.

Dr. Kingsley offered the following preamble and resolution:

WHEREAS, There are a number of gentlemen in the profession who, beginning practice about the year 1840, were acquainted with

the early pioneers of dentistry. As these gentlemen are approaching or have reached the fiftieth anniversary of their dental career, it would seem that it would be a courteous and proper thing to tender them altogether a banquet. Therefore, be it

Resolved, That this Society appoint a committee of three to co-operate with similar committees appointed by the local societies hereabout in undertaking and providing such a banquet as above proposed.

The resolution was passed, and the President appointed as such committee Drs. Kingsley, Perry, and Mirick.

Dr. S. C. G. Watkins.—Mr. President, I have a communication from the Central Dental Association of Northern New Jersey, which I would like to present to this meeting. I was appointed a committee to come here this evening and present to your Society a matter of great interest to all American dentists. On the 15th of September, before the Central Dental Association of Northern New Jersey, a paper was read by Dr. Rehfsuss, of Philadelphia, the purport of which was a description of the nature of patents. In that paper he drew a distinction between patents upon operations in the mouth and patents upon instruments, elaborating the subject quite extensively. The result of the paper was that our society appointed a committee to bring this matter before the dental profession of America, and urge its societies to co-operate with them for the purpose of getting a bill passed by Congress to prevent the issuing of patents upon operations in the mouth. Of course you all know the idea of that is to prevent further monopolies of patents on operations in the mouth, which will retard our work in our profession. I will read you the papers, which have been prepared by a lawyer of considerable ability in New Jersey. I will say that I presented this matter to the First District Society last week, and a committee of three was appointed by that Society to co-operate with other committees. It is to be hoped that every dental society in America will take this matter up immediately and appoint committees to co-operate with us in this good work so that we may be able to get it through Congress this winter, if possible. At present all communications should be sent to Dr. William L. Fish, Newark, New Jersey.

[Dr. Watkins read the petition and the draft of the proposed act.]

Dr. Allan.—Is it possible for Congress to pass an *ex post facto* law annulling patents that have been granted?

Dr. Watkins.—This bill was drawn by an able lawyer of Newark.

Dr. Littig.—I move you that a committee be appointed to confer with the committees already appointed.

Dr. Jarvie.—Mr. President, that paper speaks of an expense of about one thousand dollars. I would be opposed to the appointment of a committee if there is any expense attached to it, for this reason, that I do not think any such bill would be likely to be passed by the House of Representatives.

The President.—I do not suppose that the appointment of a committee to confer would involve any expense.

Dr. Littig's motion prevailed, and the President appointed under it, Drs. J. B. Littig, George S. Allan, and S. E. Davenport.

Dr. George S. Allan.—Mr. President, if it is proper to do it now, I would like to make a request of our members and others. I have been engaged for some time in some studies of pyorrhœa alveolaris, and I very much want specimens of teeth that have been extracted because of this disease, with any brief statement of the conditions and the treatment that may have been adopted. There are two widely divergent theories respecting the trouble, and there is no way of getting at the bottom facts in relation to them except by careful examinations of many specimens, and those specimens must be accompanied with some little history as to the duration of the disease, the condition of the mouth, and the treatment that may have been adopted. I will take it as a great favor if any gentleman who may be called upon to extract teeth for pyorrhœa alveolaris will let me have such teeth for microscopic and other examination.

Dr. Jarvie.—What does the gentleman mean by two divergent theories?

Dr. Allan.—One theory is that pyorrhœa alveolaris is of systemic origin entirely. The other is that a local fault, that may or may not have a constitutional origin, is the principal factor in producing the disease. One class of thinkers say that the disease can have its inception and its progress without any mechanical irritation whatsoever in the mouth, and others say that mechanical irritation must precede the disease itself. I read a paper on the subject before the New Jersey State Dental Society a year ago last July, I think it was, and since then I have been carrying on my studies and investigations. Of course every dentist is limited in his practice as to the number of teeth he can obtain, and I want to enlarge my material and obtain more specimens for this express purpose.

The President.—Will it not be well for Dr. Allan to allow his

address to go into our published report, so that dentists reading his request may know where to send specimens?

Dr. Allan.—My address is 51 West Thirty-seventh Street, Dr. George S. Allan.

Dr. Littig.—Mr. President, I had an interesting case just before I left town this summer, that presented some peculiar conditions. I have always believed that the abrasion which we find upon the teeth was more or less mechanical, where it was not associated with decay, but a case came into my hands wherein the abrasion or wasting away of the enamel was equal both on the labial and the palatal surfaces, and the teeth had become so thin that nothing could be done with them in the way of filling. The labial surfaces of the front teeth were discolored, but the palatal surfaces were perfectly clean, white, and smooth. I relate this merely to describe the treatment or mechanical appliances I adopt in the restoration of this class of teeth. In this case I covered the teeth with thin platinum and gold caps, making the caps to fit the teeth as closely as I could; first making a band to fit around the cervical margin of the tooth, then slitting it down while in the mouth, and bending it to fit the tooth perfectly. On the ends of these bands I soldered a little strip across, making a box; then took pieces of porcelain, and ground them thin, and put faces over these gold caps, soldering the face to the cap, and set them with zinc-phosphate. On the centrals and laterals I worked in that way, and on one of the bicuspsids and the cuspid I made the boxes slightly different. It is a method suggested by Dr. Schofield. I made the caps similar to the ones I just spoke of, but instead of soldering the porcelain directly upon those caps I made a horseshoe band down towards the necks of the teeth, slipped it up towards the proximal edges, then put a piece across the end of it, and cemented a piece of porcelain on to this little box,—for the purpose of giving strength for masticating. I accomplished the setting of these caps just before I left town, and I had the pleasure of seeing them recently, and finding them all intact, and doing good service, with one exception, and that was one of the cemented pieces of porcelain; the cement had not held it as firmly, or I had not lapped the edges quite as well as I ought, and it became loosened. I would like to know if there is any other way of treating such cases satisfactorily. The pulps in these teeth are all alive; and to cut the teeth off, destroy the pulps, and put on crowns seemed to me to be a sacrifice that I did not want to have the patient make.

Dr. Watkins.—Mr. President, Dr. Littig, speaking of abrasion,

reminded me of a case I had lately, a young lady, nineteen years of age, with quite an extensive abrasion on the superior central, lateral, and bicuspid of the right side, and the cuspid and first bicuspid of the lower jaw. I never saw a case like it before in a person of that age, and it strikes me that such a case must certainly be chemical rather than mechanical. I want to relate another case, and ask for information. A lady came to my office a few weeks ago, saying she had been to different dentists throughout the country, and almost every time she had consulted a dentist he had found a tooth with a dead pulp; in almost every case where a filling had been taken out for the purpose of refilling, the tooth was found to be dead. The pulps had died without giving any pain, or any outward appearance of trouble. I found four such teeth in her mouth, and I think there were five or six before. There was no pain from them. The fillings that were put in previously were not very large fillings, and did not approach closely to the pulps, and yet the pulps died.

Dr. Littig.—Do you know the history of the family?

Dr. Watkins.—I do not. The lady is enjoying perfect health, apparently.

Dr. Winkler.—I saw two or three cases, some time ago, in which pulps died from very slight irritation, and I thought they were due to some hereditary trouble.

Dr. Littig.—I saw a case similar to the one Dr. Watkins has spoken of, but I learned, afterwards, that the patient had been in the hands of a man who was using a kind of paste, containing arsenic, for obtunding sensitive dentine. The teeth were filled, and did not give much trouble until after the fillings were removed. I wonder if the case Dr. Watkins has related had not something of that kind in its nature,—whether arsenic had not been put in the lady's teeth for a short time for the purpose of obtunding sensitive dentine.

Dr. Watkins.—I think that would be hard to find out without getting at the dentist; and probably he would not tell.

The President. If there is nothing further under the head of Incidents of Office Practice I will call upon the first essayist of the evening to present his paper. Dr. George A. Wilson, whom I need not introduce to you, will read a paper on "The Treatment of Proximate Surfaces." (For Dr. Wilson's paper, see page 732.)

The President.—Dr. George H. Winkler has a paper on the same subject, and I think we will hear it before we enter upon the discussion. (For Dr. Winkler's paper, see page 729.)

The President.—Gentlemen, the subject treated by the papers presented to you is now before you for discussion.

Dr. George S. Allan.—Mr. President, I am astonished that a dozen gentlemen do not jump up at once to discuss this interesting subject, a subject that we have all thought of a good deal, and that is the A, B, C, almost, of our profession. I came here to-night hoping to hear something upon the principles governing the business of putting in contour fillings. The whole line of thought that is mapped out in Dr. Wilson's most admirably-written paper, is old, old as the hills. We all know it; we have it by heart; and axioms and truisms we do not want. I have listened to them until I am tired of them. It is almost an insult to tell a dentist of ability and character, who wants to do the best work, that contour fillings are the best. He knows it. What is the use of going back and re-hashing and giving us chestnuts *ad nauseam*. I would give more to have some one offer me a new instrument, or tell me a new fact as to the structure of a tooth, or the physical qualities of gold and how to adapt gold to a tooth, or how to overcome the difficulties that I am constantly meeting, than to hear these old things talked over from time to eternity.

Dr. Perry, in an admirable paper, has told us why we should put in contour fillings, and has done it so thoroughly that to-day it stands probably as the best monograph on the subject extant. But Dr. Perry for me has done more: he has put into my hands, lately, his modification of the Bonwill mallet, a beautiful instrument, and with it I can overcome difficulties that I could not overcome before. It is worth more to me as an argument in favor of contour fillings than a dozen of his essays would be.

In that celebrated work that you have all read, the "Pickwick Papers," I think that it is Winkler who asks Pickwick at an election, where he is a good deal confused as to what to do, "Which crowd shall I shout with?" and Pickwick, with that wonderful wisdom for which he was celebrated, said, "Shout with the largest." Now, gentlemen, it may be prudent to shout with the largest crowd, but the largest crowd is not always the wisest. The truth is, in this case, the largest crowd keeps silent. They do not covet abuse and criticism. They are eclectics in practice, and mostly elect to put in face fillings. Dr. Wilson alluded in his paper to a simple statement of fact which I made. It contained no principle to endorse, no practice to advocate. I simply stated a fact which stands undisputed: that was that the bulk of the fillings of the day were face fillings, and the theory of the day was contour fill-

ings. Then I ask the question, Why is this so? Can we solve the riddle? Why is it that dentists are incessantly talking contour fillings, and practising face fillings? I gave some reasons in the paper I read why contour filling was practised with difficulty, more difficulty than face filling, and I tried to show why we should act with the wisdom of a general before his enemy, and acknowledge these difficulties. The general who in war belittles his opponent, and pays no attention to what his numbers or armaments may be, is a foolish man, and is very apt to be defeated. So Dr. Wilson's conclusions in regard to my statement have no force or point, and require no answer. The whole purport and aim of my paper was to ask you to look this thing in the face. We all want to put in contour fillings; we know they are the best; we are constantly aiming to put them in well and thoroughly; but how shall we do it? What new knowledge do we want, what new instruments do we need, to help us realize more fully our ideal? I was criticised most violently for writing that paper. One man said I was forty years behind the times; another that I was making a bid for face-filling work; but not one single argument in the paper was answered, not one statement of fact controverted. Therefore I do not feel that any of the criticism passed upon me was just or fair. What I want is to have this subject approached from an entirely different stand-point from what it has ever been approached before. I want to know what is the philosophy and the science of it; I want to know what the best instruments are; I want some downright instruction; and I think that is what we are all aiming at. But I reiterate what I know to be a fact, and what every one present knows to be a fact, that while contour fillings are most desirable, yet face fillings are in the majority.

Dr. Jarvie.—Mr. President, Dr. Allan says he is seeking some new philosophy which will help to solve the riddle of why we all advocate contour fillings, yet in practice so many face fillings are put in. I think it is a matter that is very easily solved. Every gentleman in this room will agree with me that the most perfect dentures are those in which the teeth impinge near the grinding surfaces, or cutting edge, leaving a space at the margin of the gum, a V-shaped space, so that any small particles of food that may be forced between the teeth may pass out freely and readily where the space is largest. That, I think, is our ideal of the most perfectly-formed set of teeth. We do not find them in every mouth; but it follows, naturally enough, that the nearer we can restore broken or decayed teeth to their perfect type the better it is for the

teeth. Now, if that is the case, why don't we always do it? The reason is, that while contour fillings are by far the most desirable, it would often be most unwise to make them; the operator finds the conditions such that it is impossible to make a perfect contour filling, while, under these same conditions, he can make a perfect face filling; and a perfect face filling is better than an imperfect contour filling.

Dr. Allan.—You are forty years behind the times!

Dr. Jarvie.—Nevertheless, a perfect face filling is better than an imperfect contour filling. Sometimes the condition of the patient is such that we are not warranted in making contour fillings. The class of people who have the frailest teeth are those that are the least able to stand the prolonged strain necessary to the making of contour fillings, and in such cases it would be unwise, even if it were possible, to make a weak and delicate patient submit to any tedious and trying operation. It is far better for them to have fillings renewed from time to time, than to subject their nervous system to any such barbarity as a gentleman told us about some time ago, of keeping a patient in the chair six hours at one sitting while making a filling. So I think it is very easy to account for the fact that while we hold to the theory of contour fillings, our practice at times is quite different.

This, Mr. President, is a most interesting subject, the subject of the proper treatment of approximal surfaces; in fact, it involves almost an entire treatise on operative dentistry. Almost every other surface of the teeth, with the exception perhaps of the buccal surface, where cavities run far under the gum, can be easily cared for, and requires comparatively little skill; but there is such a variety and multiplicity of conditions that have to be taken into consideration in treating these approximal surfaces, that we may make mental reservations in discussing the subject that our listeners do not appreciate or understand, and therefore our statements are misunderstood. It is a subject that covers a great deal of ground and that cannot be treated properly in a paper requiring ten or fifteen minutes to read.

Dr. Allan.—Mr. President, I am exceedingly glad to listen to Dr. Jarvie. He has taken precisely the position that I take, and advocates precisely that which I advocate. Now, I think that we can only approach this subject from the stand-point of physics and of law. If we can get instruction how to do our work and better our operations, we will all be very much benefited. I confess that I felt sore over the reception of the paper which I read.

The idea that I did not advocate contour fillings, and that the paper was written in advocacy of face fillings, was surprising to me, and how any one who listened to the reading of it could gather any such misinterpretation I cannot conceive. I do not believe there is any one in the Society who has advocated or does advocate contour fillings more emphatically than I do, or who more constantly practises the putting in of that class of work. I do hope somebody will take up this subject and discuss it from the stand-point I have indicated.

Adjourned.

S. E. DAVENPORT, D.D.S., M.D.S.,
Editor New York Odontological Society.

THE AMERICAN DENTAL SOCIETY OF EUROPE.—
 SEVENTEENTH ANNUAL MEETING, PARIS, AUGUST
 6 AND 7, 1889.

(Continued from page 645.)

First Day.—Afternoon Session.—(Continued.)

DR. L. C. BRYAN, Basel, presented a number of novelties in dental instruments of his own invention and construction, among which was an *air-pump* for driving a pneumatic mallet which was adjustable to any dental engine. The driving wheel of the pump was provided with a rubber tire, similar to a bicycle wheel, and the entire pump was suspended by a set screw which clasped the standard of the engine when not in use, just above the driving wheel of the engine. By letting the driving wheel of the pump down upon the engine wheel, the friction puts the pump in motion. The force of the blow was regulated by any one or two of these contrivances,—viz., lengthening or shortening the stroke of the piston by a set screw on the driving wheel attached to the bar of the piston, lengthening the cylinder which telescoped, or allowing the escape of air by a valve on the head of the cylinder.

Any of the pneumatic mallets may be run by the pump, which has nozzle attachments for two rubber tubes, but Dr. Bryan prefers the Rauhe angle mallet, to which he has adapted fifteen extra points to meet a larger variety of cases, the set of ten points sold with the mallet being inadequate. The blows are delivered with

great rapidity by ordinary pedal motion of the dental engine, and can be regulated as above, from the finest and lightest blow desired to a blow which will drive a chisel point for breaking off refractory enamel corners or drive wedges between teeth. The fatigue of working the mallet in long operations is said to be greatly less than in treading the usual rubber ball.

A set of flexible nerve-canal reamers was the result of various improvements in the Petit reamers, the set of twelve having been made by the S. S. White Dental Manufacturing Company, after patterns and drawings furnished by Dr. Bryan. The shank of the *triangular* point is rounded and smaller than its largest cutting diameter. This prevents injury and disagreeable jarring of the enamel walls when drilling out root-canals where the whole or part of the crown remains.

Two other devices presented were a novel *rubber-dam holder*, with two clamps for holding the dam in place and supporting a napkin over the chin to protect it from the wet rubber, or drawing the dam taut in four directions to better expose the teeth operated on, and a *screw device* for adjusting to any rubber-dam clamp to prevent the clamp from impinging on the gum, the screw being out of the way of the operator in any operation, and being adjustable to a tooth of any length. With this device, and generally without it, Dr. Bryan finds the Southwick clamp, S. S. White Manufacturing Company, adjustable to any molar of either jaw, and has for two years used no other molar clamp.

Dr. Bryan called the attention of the members to some sample bottles of Hood & Reynolds's *gold cylinders*, prepared from corrugated foil of exceeding softness, and capable of great cohesion when annealed, superior for the rotation method and general use. He states that the German foil, although it is labelled No. 4 foil, is really No. 1 foil or No. 4 foil beaten out to four times the size of a usual sheet of No. 4. They have preserved their secret by labelling it No. 4 foil, leaving the public to infer that its softness is the result of some special process. Hood & Reynolds have made this foil for years, but the visit of Dr. Herbst to America advertised the German foil, and it is not generally known that the thin, soft, corrugated foil cylinders, recommended by Herbst, were first made in America, and are superior to the German cylinders in cohesion when annealed and of the same softness when unannealed. It is also tougher, and the mallet does not chop it up when annealed.

Dr. Elliott.—Dr. Mitchell has just reminded me that the American Dental Association meets to-day at Saratoga Springs,

and I propose that a cable telegram of greeting be forwarded from this Society. This was adopted and the following sent:

"The American Dental Society of Europe, in session, sends fraternal greeting.
DR. PATTON, *Secretary*."

Dr. Miller then read a paper on pathological conditions in ivory with demonstrations on the black-board.

DISCUSSION ON DR. MILLER'S FIRST PAPER.

Dr. Mitchell.—I should like to ask Dr. Miller, what are the microscopical differences between nodular calcification of the pulp in elephant's teeth and that in human teeth, or if there is any similarity between those nodular pulp deposits and those found in human teeth?

Dr. Miller.—As far as my observation goes, the formation in the pulp of the tusks of elephants are identical with those occurring in the human teeth.

Dr. Bryan.—May not these pulp stones be considered as necessary nuclei for the rapid filling of the canal? This specimen here seems to have something on the surface of the tooth which stimulated the formation of them. We can see that the formation is not followed, and they close up the space entirely from this part without reference to the filling on the side.

Dr. Miller.—If you examine it under the microscope, you will find it nearly normal, the structure in which these pieces is embedded is quite different from the pieces themselves, and we find almost the structure of normal dentine. This is an abnormal case.

Dr. Elliott.—Now, gentlemen, our time has elapsed. Is there any gentleman present willing to offer himself as a sacrifice to Dr. Bonwill? Some one having a large cavity preferred. Before we adjourn, I would like to mention that we still have two papers from Dr. Miller and Dr. Patton. Dr. Bryan has something to exhibit. Dr. Chamberlain, of Rome, is not present; neither is my brother.

Dr. Bryan.—Your brother wished me to make his excuses.

Dr. Elliott.—Then we have a paper by Dr. Haskell, which has been, unfortunately, left behind, but Dr. Mitchell knows the salient points of it and will give us them to-morrow.

The meeting here adjourned until Wednesday morning.

Wednesday, August 7, 1889.

COMBINATION FILLING AND ECLECTIC PRACTICE.

BY W. B. PATTON, D.D.S., COLOGNE, GERMANY.

[DR. PATTON'S paper having been printed in the *Dominion Dental Journal*, an abstract is furnished in order that the discussion which follows may be understood.—ED.]

The writer states that his experience during the past ten years has been that combination fillings are the most permanent,—gold and amalgam, gold and cement, amalgam and cement, tin and amalgam. He makes no mention of tin and gold, for the reason that he regards tin and amalgam as giving the same results with more ease in manipulation.

Oxychloride and oxyphosphate fillings would be the best form of material were it not for the liability of solution; but this forces the necessity for combination. In deep cavities, he fills in ninety-five cases with cement, and caps with gold or amalgam or both combined. The combination of gold and amalgam is, in his opinion, one of the best filling-materials. The dentine is more effectually preserved by it. His principle is to fill with gold wherever the stopping is visible, and the rest of the same cavity with amalgam. A prominent cavity on a central incisor would be filled on the labial surface with gold, and on the palatine with amalgam. The same treatment is recommended for other teeth. The writer then follows in review the "new departure" theories, and says, "Have plastic fillings had the same trial in all cases, in the same manner as gold?" In many places he regards plastic work as superior to gold, and follows with numerous instances, concluding as follows: "If we aim to relieve suffering and prolong the use of organs necessary to a healthy being, then searching for cause and observing effect, we must break the bonds of established usage and teaching, and, treading our way over new fields of extended and accurate observation, we may arrive at a goal where we will find that our efforts in plastic models may later be petrified into the permanent marble of success."

DISCUSSION ON DR. PATTON'S PAPER.

Dr. Mitchell.—Mr. President and gentlemen, in these days of describing theories, I think it is a very good thing to listen to such a paper and to know that it is the outcome of practical experience. I think we accept preferably to-day a line of practice, follow it

out, and our results, according to our capacities, are more or less satisfactory.

When we have been practising successfully for some little time a theory is advanced, breaking down all our pet hopes and schemes. Practice rather overrides theory, and through our patients we often find that certain proceedings are good ones or the reverse. Eclecticism is undoubtedly what we are steering for, and the man who steers close to it will not be entirely a gold or a cement filler, but will take what is best fitted for the case. One of our advanced teachers on the other side has made the remark, in a great many instances, that he has never used amalgam. Well, I do not think that he has been working to the best interest of himself or his patients.

More attention is being paid to therapeutics. Dr. Harlan has made a series of very elaborate experiments, and, according to our conception, some of the most highly prized. If we follow out his theories, we shall probably utilize more intelligently than we have done the application of remedies at our command. I think, in regard to all our lines of procedure, that the most practical man is a safely conservative one. He diagnosticates his case carefully, and upon that results mainly his success. The man who may know the merits and demerits of the different filling-materials, and will utilize them under different conditions, is the one fitted to practise. A case is to be followed out upon its merits, and by so doing, he will secure the best results to himself and to his patients.

Dr. Elliott.—Dr. Bonwill is here, and we will be glad to hear from him, however briefly, as he is very much interested in this particular line.

Dr. Bonwill.—I had hoped to have been permitted to listen, for, in my experience, I have done so much talking and working before societies that I have grown somewhat tired; but the subject you have before you is one which interests me very much, although I am looked upon as an extremist in every respect. It is well to hear what can be said upon an extreme side. I have learned that a good many things have been done, *not* wisely and *not* too well.

I have spent many years in trying to make men believe not that there is nothing else but gold, but that fillings in gold should be inserted, and that this can be done in a very short time. When I began, four hours could be spent on a single filling of a book of foil. I have seen many articles from gentlemen in this country, and often upon my own side, where they seem not to have any conception of machinery. My object was to reduce time, and save excessive nervous

and muscular strain of the operator, and save the patient from the effects of the operation. In that respect, my work has accomplished all that I anticipated. When you come to consider the vast number of cases of large cavities now to what there were thirty years ago, and what I found in Philadelphia seventeen years ago, the difference is immense. Notwithstanding all these years spent with machinery for filling, I am filling more teeth with amalgam at the present time than I have ever done in my life.

Men forget that there is some one else besides themselves. We cannot afford to torture people with these large operations. I perceive very plainly that we must fill a large number of teeth with amalgam, and where the packing of amalgam is understood there will be a better system of practice, a larger number of teeth saved, and a larger amount of contour work done.

We cannot hurry through operations like you do in this country; it is not money alone that is to be considered; not the number of patients you must have in a day to make the most out of. Eclecticism in practice is to be recommended. My practice is now and then a gold filling in front teeth; I very seldom use gold unless I have a large operation to build up. Sometimes I fit a crown to a tooth, but there are thousands of crowns grafted on teeth which are of no value. I consider it the worst possible practice. A crown may come in now and then when a tooth cannot be stopped with gutta-percha. Bridge-work is valuable, but not always available. Bridge-work is advertised over here to gain reputation. I have found gutta-percha one of the best means of preserving teeth, especially children's teeth. Amalgam is not so satisfactory for children's teeth; it is difficult to keep the cavity dry; but gutta-percha can be packed in, and it is satisfactory. A point of eclecticism which I regard as most important is to get ourselves ingratiated with the children so that we can have them better subjects in the future. I very seldom use a gold filling in a child's tooth. I would not do it. I would not fill the teeth of children at the age of six or seven years with gold. I am getting more and more in love with amalgam. I save hundreds of teeth, and I think I do as much good in that way as in any other. Tin and gold is something I have never attempted. If I have to use tin, I use it exclusively; some of the early operations which I put in for my brother are in to-day, perfect. I would not mix gold with them, with the expectation that there would be less possibility of decay. If I use gold I use it exclusively. What effect would there be in mixing tin with gold? If tin and gold would make a harder filling, one which would pre-

serve the contour of the tooth, I would say use it, and not tin; but I have seen these operations; they wear away if made ever so perfectly. Tin will preserve it just as well, or Abbey's adhesive No. 20 foil.

Dr. Miller.—I cannot allow this subject to pass by without saying something about it. I wish to take issue with Dr. Bonwill on the point of tin and gold. I think those who have used tin and gold for a number of years, and who have seen what can be accomplished by the average operator, are convinced that Dr. Bonwill has not given tin and gold a fair trial. Tin and gold has been used now for some forty or fifty years; it appears to have been first employed in England; however, Dr. Abbott has the merit of introducing tin and gold to the profession. Every one knows what Dr. Abbott has accomplished with it, and he advocated the use of it in the beginning of the history of this Society. Dr. Sachs, Dr. Jenkins, and others have used it extensively.

We find a great many places where it can be inserted with the greatest advantage. There are places where it is preferable to copper amalgam, although I am myself a great advocate of this latter material. As to the idea that tin is as hard as tin and gold, that is not the case, a tin-and-gold filling will become much harder than tin alone. I do not care what Dr. Bonwill has been able to accomplish himself in the use of gold. We want to know what the average dentist can accomplish with the various materials. This material has been introduced in the last few years in Germany, where the skill in manipulation is not so great as that arrived at in America. I think our friend, Dr. Sachs, and also Dr. Jenkins, will have something to say on the subject of tin-gold. What I wish to emphasize in particular is, that a great many dentists cannot arrive at the skill which is necessary for gold fillings, particularly in large cavities. I fill all large cavities extending under the margin of the gum with tin and gold. Of course, we know that we cannot always prepare the cavity properly for gold. No one, not even Dr. Bonwill, in cases of very extensive caries in soft teeth, can with certainty insert the gold so as to obtain a perfect filling, or one which does not soon show leakage, particularly at the neck. A better result is obtained in such cases by a tin-gold filling, or by a tin-gold filling with a gold cap.

Dr. Jenkins.—"Never measure another man's corn by your own bushel;" if one is considering eclectic practice, one must consider the person who is practising. I suppose it makes very little difference to us with what Dr. Bonwill would fill a cavity, for whatever

material he selected, he would manipulate it in such a way as to produce a good result; but another man, in his position, would merely select such a material, but by working in his own way he would obtain a better result than he would in Dr. Bonwill's way. I would say that, in a German practice, especially a practice which extends over a wide territory, where frequently patients can be seen only once in several years, a man must use remarkable judgment as to what material he should employ in each case. A man has to make a great many operations which are not absolutely ideal, or would not be ideal if he could have that patient under inspection every two or three months. For cases where the patient can seldom be seen, where the teeth are soft, where there are no well-established habits of cleanliness, tin and gold seem to me absolutely indispensable. As far as I know, it is the only material used in filling the teeth which may with age improve. If a tin-and-gold filling is well made, it is a better and a stronger filling in one year, or in ten or twenty, than it was three months after it was inserted.

Dr. Miller has carefully explained in previous communications to the Society the scientific reasons for this curious molecular change. Sometimes we have to make a tin-and-gold filling in a half-erupted molar, where it is impossible to apply the rubber dam. I know of no material which can be used under these circumstances except soft gold, to which he has referred, and which can, in any case, be as reliable as tin and gold. I remember such gold fillings made twenty-four years ago, saturated through and through with moisture doing their work, but they were made in good material. Soft gold fillings made by the most skilful operator will not last as those prepared from tin and gold. The rapidity is a very important point. Contouring can only be done where the walls are strong, and where the operator is accustomed to working it in pellets or strips in the form of rolls from the bottom of the cavity to the top.

Dr. Daboll.—Will Dr. Miller be kind enough to again explain his mode?

Dr. W. D. Miller.—We have not much time, so I will endeavor to explain this matter as briefly as possible. Place a sheet of gold-foil in a glass vessel, and cover it with a one-per-cent. solution of lactic acid. Place upon the tin-foil a sheet of gold-foil, and upon this a small glass plate to keep it in position. In the course of about twenty-four hours we will find that the surface of the gold in contact with the tin has a color very much resembling that of the tin. In fact, sometimes it is scarcely possible to say which is

gold and which is tin. A day or two later the color of the gold will be changed to brown, and in some cases to nearly black. If the experiment is made under pressure, the two sheets will adhere, stick firmly together, so that they cannot be readily separated. I have examined into the process very carefully, and have come to the conclusion that this phenomenon is brought about by an electrolytic solution of the tin and a redeposition upon the surface of the gold. It is not the tin which changes color, but the gold, the tin being gradually dissolved and deposited upon the gold, by which the two substances become thoroughly cemented together.

Dr. Elliott.—The next meeting, gentlemen, will take place in Heidelberg, on the first Monday in August, 1891.

The election for officers resulted as follows: President, Dr. Patton, Cologne; Vice-President, Dr. Davenport, Paris; Secretary, Dr. Bryan, Basel; Treasurer, Dr. Adams, Frankfort.

Adjourned.

To fitly close the proceedings of this meeting a dinner had been arranged by the Executive Committee on the Eiffel Tower, which proved very enjoyable. From there the members separated to all points of the compass, with hopes of meeting again at Berlin in 1890, at the International Medical Congress, or at Heidelberg in 1891.

W. R. PATTON,
Secretary.

NEW JERSEY STATE DENTAL SOCIETY.—TWENTIETH ANNUAL SESSION.

THE Twentieth Annual Meeting of the New Jersey State Dental Society was held at the Coleman House, Asbury Park, N. J., on Wednesday, Thursday, and Friday, July 16, 17, and 18, 1890.

Wednesday, July 16.—Morning Session.

The president, S. C. G. Watkins, D.D.S., in the chair.

The meeting was opened with prayer by Rev. Dr. Bomberger, of York, Pennsylvania.

The president, Dr. S. C. G. Watkins, then called to the chair Vice-President Adams, and read his annual address, as follows:

PRESIDENT'S ADDRESS.

GENTLEMEN AND FRIENDS OF THE NEW JERSEY STATE DENTAL SOCIETY,—It becomes my pleasure and duty to preside over this body, which to-day reassembles in convention, celebrating its twentieth birthday. In former years we have heard so much about old historic ocean that it seems needless for me to-day to repeat anything about her turbulent bosom or her wild waves, which many of you, no doubt, will try to conquer before you leave her shore. But, gentlemen, we have great reason to rejoice on this occasion, and to thank God for his goodness in permitting us to meet here on this our twentieth anniversary with unbroken ranks. Every association, in fact every individual, has a mission to perform. Our special work is the alleviation of human suffering. What greater incentive could we have to stimulate the power within us to action? Surely it is the grandest work in which the skill of man can be enlisted. We are laborers in the field of human progress, and it is only through an organized association like this that dental thought can be thoroughly and usefully applied. The advantages of personal interchange of ideas, which arise by the discussions in our assemblies, are not attained by merely reading the journals in the seclusion of our offices. There is something in the friction of mind against mind which stimulates to action, induces investigation, and leads to higher attainments. Much has been accomplished, yet we are only in our infancy. We must grow.

There is a demand for advancement, for a higher qualification, a broader curriculum, and an extension of time in our colleges. It is a problem whether the increased number of colleges is an advantage to the profession or not. I cannot but view the increase of schools with alarm. Are they created because of necessity, or through jealousy and personal preferments? Although the number of colleges has augmented, the Association of Faculties has recognized the demand for a higher standard in dental education, and has increased the length of the term to five months for three successive years, which is a step in the right direction. I would recommend to this Society that we put ourselves on record as favoring this term of pupilage, with a lecture course of not less than seven months in each year, and we should insist upon an outside Board of Examiners. For it is at the college-door that we should guard the sacred precincts of professional life. Instead we have had to place this matter in the hands of our State Examining Board, and to ask it to draw the line, so far as professional honor in this State is concerned, by

examining all who desire to practise dentistry within our borders, even though they be graduates. Also that the Examining Board have the power conferred on it by the laws of the State to say which college shall be deemed reputable.

At the semi-annual meeting, held at Montclair, January 11, the Committee on Legislation was instructed to procure the passage of an amendment to our State law regulating the practice of dentistry, which was successfully done, and I now have the pleasure of congratulating you upon your law as being second to none. These laws clearly define the requisites for a dental practitioner, and they protect the interest both of the practitioner and the public. I would suggest that a vote of thanks be tendered the legislative committee for its efforts, which required a great deal of sacrifice. I will not say more in regard to legislation, as I am fully aware that the committee is anxious to give you the results of its labors. I would invite your attention to the well-known fact that the American Dental Association will meet at Excelsior Springs in August. Also that the International Medical Congress, with its dental section, will meet in Berlin. I hope that our Society will be well represented in both of those conventions.

It is a pleasant privilege for me, as president of this Society, to welcome so many eminent members of our profession from sister States who have come to mingle with us, and give us the benefit of their investigations on this occasion. Gentlemen, we appreciate the sacrifices you have made, and we cordially invite you to participate in our discussions with perfect freedom. I am proud to be able to announce to you to-day that there is neither strife, jealousy, nor contention within our ranks; that it has been said that we were an overgrown mutual admiration society, and express the hope that this harmonious condition of affairs will continue to exist for the future good of the organization. I now thank you, gentlemen, for the honor you have conferred upon me, and I now assume the duties of the office of president with some apprehensions. I hope I may receive your hearty co-operation and support.

On motion, the president's address was referred to the following committee: Drs. B. F. Luckey, Fred. A. Levy, and Albert Westlake.

Dr. J. A. Osman then read an essay entitled "From Another Stand-Point." (For Dr. Osman's paper see page 739.)

Dr. L. Ashley Faught.—I have listened with the deepest interest to the reading of this admirable paper by Dr. Osman. The theme he has chosen and the time of its presentation seem to me to be

most opportune. The subject of dental education has earnestly engaged the attention of the profession at different periods during the last twenty years. Its claim for consideration has, however, been most persistently presented at dates which correspond with a decided change in the stand-point of observation; and each new outlook seems to have been taken at the beginning of a new decade. Even the elements of crude dentistry began to crystallize out of a mere apprenticeship into a higher organization about the year 1840; and the marked extensions of the collegiate system then established tallies with the years 1850 and 1860.

Half a century of experience stands on the records, and what is written and said at the opening of this decade, if it follow the rule, will bring us to another stand-point in the year 1900. We have been striving for perfection. Can we feel the present step to be final? Can we, looking backward, outline to-day that which will stand in the future? These are pregnant queries, for it would seem from the stand-point of the essayist that our further progress is to be but cyclical. Our first history is an era in which everything was mechanical. "It was the day of the reign of 'ingenuity,' when the man who was 'handy' with tools was necessarily a 'born dentist,' and took to it as a mechanical operation." In the course of human events we passed from the mechanical to the mental. Scientific instruction was considered necessary to be able to practise, to procure dignity, respect, and recognition. That the latter step should have pushed almost all evidences of the former to the wall, even to the point that the highest (?) *dental* attainment is to become a graduate in medicine, is not a matter of surprise. We are by the paper just read now invited to return from the error of our way, and again develop the mechanical; to pay less marked attention to theory; to give the attention to the practical which it should receive, and to make our dentists hand-wise rather than head-wise.

Such reversion is, even as the essayist suggests, because "no two people see the same thing in exactly the same light;" but strange it is "how *very* differently different people see the same thing."

Our fathers did not regard the mechanical as the most valuable training, but we view it as a thing very much to be desired. Difference must be in cultivated perception, and cultivated perception is the outgrowth of scientific training. I cannot, therefore, entirely agree with the sentiments of the essayist which I have just quoted, the tenor of which is to train the dental recruits more and teach them less; for I conceive that our highest good lies not in

developing either the mental or the mechanical at the expense of the other, but in a wise and judicious blending of the two. While it is true that ours is a surgico-artistic profession, and that mechanical operation constitutes the largest part of our duties; that we are engaged more with the mechanical than with the medical, more with the prosthetic than with the therapeutic; yet the coming dentist will practise as an adviser as well as an operator, and must be a scientific man. What he should seek to do is to blend the scientific with the practical; but this practical education cannot be taught, it can only be acquired. It is therefore a fair conclusion "that the objections of the utilitarian to the higher scientific education hold good in only one respect,—i.e., in the deficiency of practical training, and the proper union of science and work. This deficiency under the present system is indefensible, and must be improved. But we must defend it against his further attacks, because scientific education is valuable, as, first, including nothing irrelevant or unnecessary; second, as being required for mental discipline; and, third, as tending to elevate the morals of dental education." How this blending is to be best accomplished I am sure that those engaged in the active work of teaching can more properly suggest, and I have all faith and confidence that it will receive at their hands all merited consideration.

There are, however, concomitant evils connected with dental education which, from our stand-point outside the ranks of teachers, demand indication. I know it is easier to pull down than to build up, to criticise than to create; and yet the true and permanent elevation of our profession requires that we consider not men and institutions, but that we speak the truth in love.

We want, and must have, at the present time, less rivalry between our institutions of learning. The effort should not be for popularity, or to rank as the best; but the aim should be the same in all,—to help one another preserve the honors of the degree, and to properly prepare material for the dental ranks. The list of matriculates will bear large pruning, for many are admitted who show a most unhealthy tone at the very start by wishing to know "how to get a degree with the least expenditure of time and money;" and many are graduated whose dental diplomas are, as indicated by another, "simply a lie. It certifies that the purchaser possesses the qualifications necessary to practise dentistry, which his instructors must have known, if they knew anything, that he did not possess." I trust that this will not arouse antagonism in the breast of those who are so nobly devoting their lives to the work of education,

for I am fully aware that the flaw lies more remotely. Self-preservation is a law supreme, and to obey it is but natural. Truly, though, we need not so many colleges, and if quite a number could be done away with and the rest relocated with non-conflicting territory, and these heavily endowed, a great step would be taken towards the eradication of corruption and the establishment of such institutions as need only receive for preparation and graduate those fitted to practise dentistry. I desire to lay especial stress upon this need of endowment. Money has been left, by those possessing it, to legal, theological, medical, scientific, and art schools, but not one dollar yet, so far as I am aware, has been given to any dental institution.

I believe, too, that a more healthy tone could be imparted to dental colleges if their boards of trustees were composed of their own local alumni. These gentlemen, having no interest in the graduation of large classes and a decided interest in suppressing incompetency, would, by their consideration of the names recommended by a faculty for graduation, never allow such recommendation to be equivalent to the issuing of the mandamus for conferring the degree. Operating in somewhat similar manner, much can be expected from the work of those State boards of registration and examination in dentistry which may be in the future created to exist under such State dental laws as was the happy lot of this Society to succeed in having passed in April of this year.

I cannot let this opportunity pass without also calling attention to a needed reform in dental education which, to my mind, has a most *practical* bearing. In reviewing the issued yearly announcements of the colleges, and the public advertisements of them in the dental journals, the eye is arrested by the uniform tendency to have long lists of demonstrators. This, at first glance, is assurance that the students are most carefully taught in the manipulative department. Careful analysis shows the fallaciousness of such promised instruction, for many of these demonstrators are, as a rule, recent graduates, and who for the most part have not that mature experience which here, more than in any other instructor, should be possessed by him who assumes to guide the inexperienced. Such long lists should be done away with and replaced by one or two individuals who, from long experience in actual practice, rank coequal with the gentlemen holding the professorial chairs. The teaching in this department is vital in importance, and should never be intrusted to the novice.

The clinical teaching in dental education is the stronghold of the practical, and should not be reduced, as it too often at present is, to a mere exhibition of the introduction of finely-finished gold fillings before students by noted practitioners. It is through seeing others perform varied operations that suggestion is had of those little essentials which, to my mind, cannot be obtained in any other way. I would, therefore, have the clinic list and day of each college made not as full as possible, but *full*, and special effort exerted to so maintain it.

I am heartily in accord with the second reform mentioned in the paper,—that we educate the masses, the busy people; because I believe that all education in dental matters tends to help attain for ourselves, or for our successors, the position we seek; and yet I cannot but feel that the knowledge possessed by the public is much more advanced than it is willing to admit, for we have talked and taught these things for many years. The real difficulty in the attitude of the public is, that dentistry is without legal standing; and the public seek and accept a service that is neither intelligent, scientific, successful, or safe, so largely proffered them by what are understood as "legally-qualified dentists." A premium is thus placed upon such poor dentistry, which, in the present legal condition of the profession, will not be removed, and colleges are encouraged to produce men able to measure to this standard, for all efforts to produce better men will be futile until a change is accomplished in the legal standing of the calling, and an appreciation shown by the public in the fees they would be willing to render for their services. Men are not easily found willing to reach a higher point than that at which they will be remunerated by the public, especially when their diplomas, though reading "we do most freely and fully grant and *make sure* all the peculiar rights, honors, and privileges pertaining to said degree," *do no such thing*. That all this should be so is passing strange, and yet it is true; for in our educated and educating age, it is almost impossible to believe that ignorance has anything to do with the reproach that men do practise dentistry illegally who are thoroughly unqualified, as well as do many legally who are comparatively incompetent. The cause of the existence of these evils lies in the non-application of the knowledge possessed by the public, and the consequent willing acceptance of such service; and they will continue until the people lift their demands to a level with their knowledge. It has been advanced and believed that the growing intelligence of the general public would eventually reform matters, and we have consoled ourselves by directing our

efforts to their instruction in subjects pertaining to dentistry. Much good has been done in this way, but the startling truth is that the end for which the instruction was given is far from being attained. As the public will not use this knowledge, and select and properly remunerate worthy practitioners, it is a fact to be recognized that the practice of dentistry will only be raised to a safe standard, and mountebanks and quacks driven from their deceptive practices, by an invocation of the strong arm of the law. We need a universal recall of all State laws that are full of faulty enactments, and corrected ones with more extensive powers passed. Such concerted action, coupled thereafter with prompt prosecution of all violators, will do more for living, concrete dentistry, in the minds of the public, than all the most scientific teaching, in the most guarded and attractive language, in the public press. That this is true is manifested in the fact that even the most ignorant receive the services of a physician with reverence, respect, deference, and with willingness to remunerate, if possible, simply because it has dignity through legal standing.

We therefore need not to look so much at the condition of the public as we do to consider ourselves, to organize more fully on a broad, learned, professional foundation; to establish a conservative love for the general interests of the profession, and a fraternal love for each individual brother that will jealously protect his interests as our own.

Dr. R. McL. Sanger.—The attention which the leading minds of the profession are now giving to the subject of higher dental education is one of the best indications possible of the advance of dentistry. The papers that have been recently read before different dental societies, and have received a hearty welcome from them, notably the paper read by Dr. Kirk, of Philadelphia, before the First District Dental Society of New York, together with the able discussion of the same, have made us feel that great things might be reasonably expected of the dentist of the future.

But Dr. Osman, in the very able paper to which we have been listening, has directed our attention to an entirely different view of the subject of dental education,—to wit, the education of the public. The thoughts presented are well worthy of careful consideration, and the results that would follow a practical application of the views of the writer make a beautiful picture in the imagination. If we have been led to take a rosy view of the coming dentist, Dr. Osman now supplements it by a picture of an educated public in a setting of equally roscate hues. We are charmed with the prospect

of having patients in our chairs who know so well what ought to be done that they are perfectly willing to leave the management of their individual cases in our hands.

It would be impossible in the short time allowed for discussion to review the whole subject as it has been presented to us, and I will therefore speak of one or two points which have not been definitely mentioned, yet are suggested by the paper, and are in accord with its general purport. There is truth in the saying that a little knowledge is dangerous. You will all agree with me in the statement that a patient who knows just enough to think he knows more than he really does is an unmitigated nuisance. Yet, when we have said this, we must still allow that there are some things in reference to the care of the teeth that should be more widely known than they are.

Very much can be accomplished in this direction on the lines suggested by Dr. Osman, but it is in connection with the children that we can accomplish the best results. It is a well-worn statement that, given the control of the children, the future of a generation can be determined, and what has actually been done through instruction in youth is almost incredible. Probably the most remarkable illustration of this is in the training of Hindoo boys. A European of intelligence and education may spend years in India investigating the marvellous caste system of the Hindoos, and be compelled to own at last that he has not fully mastered the details. But the young Hindoo at thirteen years of age has been so thoroughly trained and instructed in the intricacies of the system that, in practice, he has never been known to fail, through ignorance or carelessness, in keeping the minutest points.

Instruction in dental hygiene can be given in the home by parents, of course, and this is being done more and more. But in line with the suggestion that the State Dental Society should take up the work of sending out information through the press, I would suggest that something could be done to advantage by introducing instruction in dental hygiene into schools, either by encouraging short talks to the scholars at intervals, or having the information we wish to give put into the form of lessons. This is being done in matters of general hygiene, and physiology is now commonly taught, so that the way is already prepared for the introduction of this teaching.

The other point which I will mention is one of some delicacy, because it concerns our medical brethren. It must be said in all kindness that there is need of more exact dental knowledge on the

part of the family physician. As it is now, the dentist is often put to great inconvenience in doing what is best for the patient by the faulty advice given at home by the medical attendant. It frequently happens that patients come into a dental office to have a number of teeth extracted, and wish to take an anæsthetic to escape the pain which will otherwise be unavoidable. In these cases there is usually a large proportion of roots without crowns, and the dentist agrees that an anæsthetic is desirable, not only because pain will be avoided, but also because the shock to the nervous centres will be greatly lessened, much to the benefit of the patient. But when he makes his arrangements for giving the nitrous oxide, the patient disconcerts him by saying that she cannot take it; her physician told her she might take ether or chloroform, but not gas. Here is a quandary. In almost every case the gas can be taken without the least inconvenience, while the danger of giving either of the other anæsthetics for such an operation would make it inexcusable, and the shock from operating without an anæsthetic would be considerable. The physician may never have seen gas given, or at least infrequently, while the dentist has daily experience in its use. Here is an awkward position. The operator does not wish to give ether or chloroform, but to give gas. To express his opinion brings him into conflict with the medical attendant, and still the patient calls for some anæsthetic.

Another point in which the dentist is hampered by the advice of the physician to the patient, and one involving oftentimes more serious consequences, is in connection with ulcerated teeth. A patient comes into the office with a face swollen from accumulation of pus and the accompanying inflammation, the source of the trouble being a diseased tooth. The indication seems plain to give an outlet to the pus by extraction, the tooth being past saving. The advice to have this done without delay is given, but it is met by the statement that the family physician has given orders that the tooth must not be drawn until the swelling has subsided. The patient returns to the physician to have the head incised in a flaxseed poultice, followed in a day or two by a plunge of the bistoury, usually from the outside. The result, as we all know from experience, is frequently seen in lazy abscesses, which continue to discharge until the offending tooth is finally removed, leaving ridges of cicatricial tissue as a life-long reminder of a serious mistake somewhere.

But it is not necessary to multiply examples; we meet with them daily in our practice. The question is, how can we remedy

this? Might not the State and local societies do a little good missionary work right here by inviting the physicians to take part in our meeting and discussions, or by exchanging papers with the medical societies in our midst? Such a course would not only make life more tolerable for the dental practitioner, but would elevate him in the respect and esteem of his medical co-laborers.

(To be continued.)

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE American Academy of Dental Science held its regular monthly meeting May 7, 1890, in the Boston Medical Library Association rooms, President Seabury in the chair.

Dr. William P. Cooke read a paper upon "Formations in the Pulp-Cavity." (For Dr. Cooke's paper, see page 725.)

Dr. Codman.—I think this is too good a paper to pass without every one present saying something on it. Surely the facts are placed before us, and there were several which came up which seemed to me to be extremely interesting. The one that strikes me first, and is of the most interest to me, belongs to the sections of exostosed teeth. I was not aware before that exostosed teeth had this deposit as large or larger than others, and it brings up an interesting question in my mind,—Was the deposit in the pulp-cavity first, or the exostosis, or did they come together? It seems to me that the deposit in the pulp-cavity occurred first, though both may have taken place at the same time. It is a matter which, at first sight, does not seem to be of any great importance, but still it is a leading point towards the solving of the problem of the irritation. My theory is, and I believe it is also the theory of the essayist and most of the other gentlemen who have written upon this subject, that a certain amount of irritation produces these deposits. We have seen it illustrated by the fact that pulp-stones, at least in a great many of the cases, are deposited directly under fillings,—directly under cavities,—where the greatest amount of pulp-irritation has at some time taken place; hence, in endeavoring to solve the problem every point like this is worthy of consideration.

Dr. Brackett.—I must add my expression of appreciation and

gratification for the paper that has been presented before us. I have been very much impressed with the improved method of demonstration over that prevailing in former times, and this, added to the foundation facts shown, has made it very interesting and instructive for us. It seems to me that the essential fact in connection with all of these cases, and that has not been very prominently mentioned, is the presence of an abundant supply of lime-salts in the system. I have never yet seen anything of this kind in a deciduous tooth, and I think it is the experience of most practitioners that the percentage of deposits of this nature increases with age, increases coincidently with the process of calcification in other tissues with advancing years, as it takes place in cartilage, as it takes place around the periphery of the pulp, as it takes place in the coats of the arteries and valves of the heart, and so on, indefinitely. I should simply add to the expression of the last speaker, suggesting irritation as a determining factor in the development of this condition, that we may assume as another element the abundant supply of lime-salts in the system. An analysis of the skeleton in the cases of teeth having this dense structure would, I think, show a similar result in nearly all its parts. That is to say, such teeth, having either of these conditions,—hypertrophy of the cementum, or calcification within the pulp-chamber,—are more apt to be found in persons having an abundant supply of lime-salts than in individuals where the supply of lime-salts is lacking.

Dr. Eames.—I am very much pleased to see the illustrations of this pathological condition. I have been struck with the force of the many facts that have been brought out, and shall easily remember them because they have been so plainly illustrated. I am moved to speak because I feel that there are those who have noticed these formations early in life. I must say that, so far as I have observed, I have seen more of them existing in persons in early life, even in deciduous teeth, but more particularly in young persons of from twelve to eighteen years of age. It has been pretty well shown that these deposits originate from irritation, and there may be a variety of these conditions, and not so much because there is an abundant supply of lime-salts in the system. For some reason the lime-salts may be diverted from their regular channels and be deposited here or there. We may fill the system, saturate it, so to speak, with lime-salts, and if the natural channels, with their corresponding nerve-supply, are in a healthy condition, the lime-salts will not be found in excess anywhere in the body, neither on

the skeleton, nor in the pulp-cavity, nor on the teeth in the shape of exostosis. There are lime-salts enough in the common food that we eat daily to supply what is needed for a normal condition; but even if we take a case that is not plentifully supplied with lime-salts and produce a sufficient irritation, we may have an irregular formation in the system, an exostosis, because of the irritant. The fact that we find these formations in adults does not prove the time of their origin. They may have begun in childhood and kept increasing more or less slowly until they come to our notice later in life.

I might say that within two or three weeks I amputated a tooth which was apparently sound. There was certainly no pain or discomfort to the patient, and I found quite a large ossified condition in the pulp. It was a right superior lateral.

Dr. H. F. Hamilton then read a paper on "The Combination of Tin and Gold as a Filling-Material." (For Dr. Hamilton's paper, see page 738.)

Dr. Briggs.—I would like to add my testimony to that of Dr. Hamilton with regard to this combination. Dr. Hamilton spoke to me about it some two and a half years ago. I tried it in several cases and waited a year to see what the result would be. In the mean time I did not hear anything further about it, and did not know of any one else using it, but at the end of a year the results were so satisfactory that I have been using it ever since. There is scarcely a day passes that I do not put in one or more of these fillings. I use it in many of those cases where formerly, as Dr. Hamilton says, I used cement or gutta-percha. I feel it is almost as conservative a filling as either, and almost as easy to put in, while it is of course perfectly durable.

Dr. Williams.—I should think it was about six years ago that a lady came to me who had been a patient of Dr. Frank Abbott, in Berlin, and showed me some fillings of this combination, which she stated Dr. Abbott wished me particularly to inspect. He also sent a letter to me which she had lost, so that I was unable to know what he had to say about them. I found them doing admirably, several of them being large fillings, and all of them in approximal cavities, up near the borders of the gum, well preserved. I kept watch of that case, but I found that the inveterate enemy caries did get in at one or two places. It is not a specific; it does not prevent decay absolutely.

Dr. Banfield.—I would like to ask Dr. Hamilton if the method requires considerable separation before insertion?

Dr. Hamilton.—With this, as with other materials, space is an advantage. I separate about one-half as much as for a filling of gold alone.

Dr. Clapp.—What gold do you use?

Dr. Hamilton.—I use Knapp's foil. It is non-cohesive and softer than soft gold.

Dr. Taft.—This subject of combination fillings has long been an interesting one to me, and though I have had no experience as yet with this material that Dr. Hamilton speaks of, I feel encouraged to try it after listening to his paper, and I am very glad he has brought the subject before us. The article in the paper to which he has referred I do not remember having seen, but I shall take a good deal of interest in reading it over. I should like to ask if the filling is put in exactly like a soft gold filling, that is to say, by the wedge process?

Dr. Hamilton.—Yes, as nearly as my experience with soft gold is concerned. I have never used very much soft gold.

Dr. Codman.—I think most of us who have read the *Dental Cosmos* must have noticed the articles on combination fillings that have appeared from time to time, but a good many of us have not tried them, because there seems to be no reason why the combination of two *pure* metals, as tin and gold are supposed to be, should produce any new result. Now we would, all of us, like to know, if it is really so, if there is any change which goes on between these two metals. I do not pretend to be up in chemistry to know for a certainty, but it seems to me that no change can take place unless there is an intervention of a third oxidizable metal. The ordinary tin-foil is not pure, it contains lead, and it is possible that the combination of the tin, the gold, and the lead produces the result spoken of. When the metals are brought into contact the lead begins to oxidize at once, and this enlarges the filling by a slight increase of size. It is tight, and grows tighter by the very fact of its enlargement. This may be the philosophy of it. Of course, there is still pure metal enough to hold the filling together and hold it strongly, but there seems to be some reason why the combination of two metals should be better adapted than either of the metals individually.

Dr. Williams.—Does Dr. Codman think that the tin-foil that is usually sold contains lead to any appreciable extent?

Dr. Codman.—Yes, sir. In chemistry it is not always necessary that there should be a large amount of the intervening metal to bring about action between the other two metals. I really do not

believe that there is lead enough in the tin-foil to do any physical harm, but I do believe that a large proportion of it contains some lead.

PRESENTATION OF SPECIMENS.

Dr. Smith.—I received a letter from Dr. Brackett this afternoon, saying that he would be present,—possibly late,—and would have with him a warm-air apparatus, as he expresses it. I did not receive it in time to have it put on the card. Also, I did not know of Dr. Hamilton's paper in time to have it announced, but Dr. Hamilton has had a standing invitation to read a paper whenever he feels so inclined.

Dr. Brackett.—Mr. President and gentlemen, this is an apparatus for which I am indebted to our friend Dr. Bogue, of New York, and it came to my mind, just as I was starting from home, that I was indebted to him for a great many things, tangible and intangible. Of the tangible things, I have here one of the earlier forms of apparatus for pressing teeth apart immediately. Of all such contrivances, it is the one which I use with the most satisfaction. It is especially applicable to molars and bicusps, and is one of two instruments which he made; one he kept himself, and this one he gave to me.

This is one of a pair of instruments that are partially home-made by Dr. Bogue, and is presented simply as a mirror, the narrow oval of which makes it especially applicable in reaching far back in a mouth that does not open very wide. The glass and frame were made by C. Ash & Sons; the handle is an individual thing.

The warm-air apparatus is designed especially for lessening the sensitiveness of cavities. Of the variety of principles upon which obtundents operate, one of the most valuable is the principle of dryness. If we imagine, for the sake of explanation, a jelly-fish completely desiccated, and compare it with the jelly-fish under normal conditions, a marked difference in everything that goes to make up the functions of its tissues would be apparent. Applying this principle, we can easily understand the difference between the cutting of a tooth when it is freshly extracted and cutting it after it has been exposed to dry air for indefinite months. It seems to me that of all means for obtaining dryness by a hot blast this apparatus is as simple as anything can be. The cylinder is heated over an alcohol lamp, or Bunsen burner, and air is supplied to it by means of a simple rubber bulb, with valves, and an interposed elastic chamber, the whole similar in operation to the blower used in soldering. The amount of heat can be regulated by the amount of heat that is

given to the cylinder, or by the rapidity of blowing and the distance that it is held away from the tooth. In those cases where dryness can be applied I have never used anything so satisfactory, and apparently so harmless, as this very simple apparatus. It is the design of a French workman, not a dentist, and I believe they are not yet to be had in this country. Just what they will cost I am unable to say, but in France, I believe, the cost is about six dollars. The success which Dr. Shumway had in making cohesive gold work satisfactorily with the smooth instruments which he used was directly dependent upon the attainment of great dryness. You will find, by holding that close to the face, quite a little degree of heat, and the circumstance of the current of air steadily flowing does a very great deal in accomplishing dryness. It is possible in a few minutes to make a tooth cut so that it will ring under the excavator like a tooth that has been extracted for several months. In exhibiting this apparatus before the Academy I do not wish to take any of the honor to myself, but I present it to you as the contribution of our friend Dr. Bogue.

There is one point in connection with the warm-air apparatus which I forgot to mention, and that is, it is a very nice help to hasten the hardening of a cement filling, thereby saving time, and adding to the durability of the filling.

WILLIAM H. POTTER, D.M.D.,
Editor American Academy of Dental Science.

Editorial.

REFLECTIONS ON THE PASSING YEAR.

THE close of the year's work leads naturally to the thought, has there been any material gain in the dental profession during the period, and, if any, in what direction? A year without advancement is a year lost. A year of stagnation is disastrous to the best interests of any calling, as it means a double effort to bring up the lost months and a universal crippling of energy.

It is questionable whether any year can be placed in this category. Insensibly there is growth along mental and physical lines, while the extrinsic evidences may be lacking to demonstrate it.

The last twelve months have not shown any marked advance; indeed, the pessimist may say, in sorrow, the present days are not those of the past. Verbiage has given place to solid work, demonstration to theory, a want of familiarity with the methods and discoveries of a past generation and a persistent attempt to destroy this work that cost so much to make the present more brilliant by contrast. These are familiar expressions to readers, and when the cry is heard, "Our conventions are no longer of value in a scientific sense; our local associations are lacking in life and have ceased to be more than social reunions," we are forced to ask, is this true? It is unquestionably the fact that there is sufficient evidence to sustain the charge; but the caviller is, unfortunately, the one least able or willing to look at professional life philosophically.

The past year has not been a weakling among the years. It is true that, while it has seen the publication of more works of extraordinary merit than any previous decade has furnished, the work has not been done this year, nor has the twelve months been prolific in great results, judged from a scientific standard. There must be periods of rest, periods in which large bodies of men seem to stagnate; but it is simply the inertia of mental force, and will, in the advancing time, give a momentum doubly aggregating any temporary loss.

The fact that there has been criticism along all these branches of professional work is an evidence in itself that there is mental

activity and unrest, and that means, in the near future, change and progress.

The year just about closing has not been a lost year. It has witnessed in many directions a healthy growth. This has been clearly shown to the intelligent observer in all our conventions, whether local, State, or national. It has been a year of conventions. They have demonstrated, if nothing else, that the profession is actively interested in these means of training, and regards them as important auxiliaries to the schools. The latter have not been laggards, and have used the passing months in perfecting the advanced work necessary in the increased length of course before them. There has been exhibited an impatience with old methods that indicates health, even though this activity may not lead to great results. The papers and discussions in all the societies have shown dissatisfaction with existing modes. Theory and practice have come in conflict. Modern methods in preventing caries have had to meet the advocates of the still older processes and re-prove themselves. Methods supposed to have been settled show signs of weakness. There is nothing, apparently, too sacred in the list of dental operations to be shielded from attack. This is as it should be. The truly progressive mind welcomes all criticism. It is the open door to knowledge, and without it science would cease its labors, progress would stop, and man himself would lapse into barbarism.

The year just opening promises to be active in many things. It will undoubtedly be one of change, of mental growth. As the dental profession is a part of the great thinking world, it should do its part to stir the intellectual current as never before, and every man who claims to be a member should resolve to be one in the active body, attend the conventions, and by his presence help to make a solid phalanx ever advancing towards the goal of professional unity.

PROFESSOR MILLER'S "MICRO-ORGANISMS OF THE HUMAN MOUTH."

WE have received from the publishers, S. S. White Dental Manufacturing Company, a copy of this anxiously-looked-for work of Professor Miller. The present English edition is, in many respects, superior to the German, and we deem it especially worthy of this special notice in advance of the general review which will appear in the January issue.

BIBLIOGRAPHY.

A TREATISE ON THE IRREGULARITIES OF THE TEETH AND THEIR CORRECTION, including, with the Author's Practice, other Current Methods. Illustrated with nearly 2000 Engravings (not embracing those in the Third Volume). By JOHN NUTTING FARRAR, M.D., D.D.S. Volume I., 758 Pages. New York City, 1888.

The first volume of Dr. Farrar's great work is now ready for distribution, and will soon be followed by two additional volumes. The author has written so voluminously, and has so long been regarded as an authority on regulating teeth, that it may seem perhaps, to many, that they have already thoroughly mastered his ideas, if perchance they may not be able to follow him in all the described practical details. A judgment based on any preceding efforts of the author, the description of which may be found in the periodicals devoted to dentistry, will fail if applied to the present volume. The natural feeling will be that it is a mere collection of these stray papers, with possibly additional comments. Such an opinion would be very far from the truth; indeed, a perusal of the book indicates that the author has avoided this temptation, and has given the profession a work singularly free in this respect.

In the preface he says, "I have aimed to make my views especially clear, not only to correct current erroneous impressions, but also to place the results of my experience before the profession to whose welfare and progress I have striven to contribute during the best years of my life.

"When I began to practise, principles, methods, and even suggestions in regard to regulating teeth were meagre. The apparatus in use was crude, clumsy, uncleanly, and painful. . . . Invention, to me, has always been a diversion, not a labor, therefore I found enjoyment in this occupation; and when I succeeded in making, among various instruments, devices that seemed to be an improvement on the established forms of regulating apparatus, I thought it no more than right to describe them for the benefit of others."

In the "Preliminary Chapter" the author thus outlines one of the "cardinal principles" of the work: "The importance of the observance of the physiological law which governs tissues during

a movement of the teeth (by means of art), the object being to prevent pain. To insure this result (exemption from pain) the pressure by which the movement is to be effected should be under the control of the patient, a requirement which implies the use of instruments capable of being operated and adjusted at will. By this the maximum rate at which it is possible to move teeth painlessly can be ascertained. . . . To determine this rate and test its value, I made a series of experiments which extended over a period of several years. The results were made known to several professional gentlemen in 1873, and in February, 1874, this topic was the subject of my graduating thesis at Jefferson Medical College, and afterwards read, in the main, before the Brooklyn Dental Society, April 12, 1875, and published in the *Dental Cosmos*, January, 1876."

Under the heading, "Scope of the Work," the author says, "This work would have been finished much earlier had there been some accepted classification of subjects to serve as guide. . . . Prior to 1874 very little had been written upon regulation, and that was of a miscellaneous character. There had not been, so far as I know, any attempt to definitely classify mechanical devices; no nomenclature indicating the position of teeth; no classification of expression for individual teeth, nor of types of the arch; little definite concerning harmony between the facial expression and the arrangement of the teeth; no clearly-marked differentiation of the principles adopted in manufacturing appliances, nor any differences recognized in the character of force; no mathematical demonstrations of the philosophy of action and reaction in the bearings of the apparatus on the teeth; no accurate demonstration of the effect of irregularly-developed teeth upon undeveloped ones, nor upon their sockets, by the process of regulating; no definite explanation as to the action of the alveolar tissues under the influence of the different kinds and degrees of force; nor any clear statement as to the difference between moving teeth by causing absorption and moving them by taking advantage of the flexibility of the alveolar tissue. Above all, the fact that pain may be avoided with certainty by conducting the operations within the domain of the physiological functions of tissues was wholly unknown. . . .

"The work is divided, for the convenience of the reader, into several parts. The first volume deals with the history and etiology of the subject: 'The Basal Principles of Regulation,' 'Nomenclature,' 'Principle of Construction of Apparatus,' 'Retaining Devices,' 'Laboratory Rules for Manufacturing Devices,' 'Application of Force,' 'Eruption,' 'Antagonism,' 'Interdental

Spaces;' 'Correction of Irregularities by Grinding, and by Extraction.'

"The second volume contains the 'Classification of Irregularities, and the Various Methods of Treatment for Correction;' 'Straightening Teeth to Line;' 'Turning and Elevating Teeth;' 'Widening and Enlarging the Dental Arch;' 'Correction of Protruding Teeth;' 'Miscellaneous Suggestions, Practical and Theoretical;' and lastly, 'Æsthetics of Dentistry.' . . . The third volume is wholly pictorial, being an object index of all mechanisms described in the other volumes."

It will be seen from these quotations that Dr. Farrar has wisely divided his subject, and takes for preliminary consideration the principles underlying regulation of teeth, and deals largely with the application of force and the construction of the mechanical devices which will best subserve this purpose with a minimum amount of suffering to the patient.

Part II., "History," will repay careful perusal. While many of the facts detailed are familiar to intelligent readers, the author has embodied them into readable form and made them available for reference. He quotes in full from the labors of Dr. Van Marter on the work of the Etruscans, a race of men which preceded the Romans in Italy, and "have been extinct for many years, probably about two thousand;" also interesting extracts from Dr. H. Eames on "Russian Antiquities." He also gives illustrations and descriptions of instruments from Pompeii, which he sketched during a visit to the museum at Naples.

In chapter iii., page 57, he discusses the "History of the Use of the Screw" in regulating teeth, and divides the honor between Dr. W. H. Dwinelle, of the United States, and Charles Gaine, M.R.C.S., of England. To "Dr. Gaine for being the first to use the screw simple, and to Dr. Dwinelle the invention of the screw-jack."

Part III. covers many interesting subjects, among others "The Influences of Evolution upon the Jaws;" "Premature Extraction of Deciduous Teeth;" "Power of Heredity;" "Influences of Insanity and Idiocy upon the Teeth."

In chapter ix., "Upon the Question of Heterogeneousness in the Mixture of Races," the author very ably draws from various sources the conclusion that "there is an underlying power, a law that tends to evolve order out of confusion, not only in mental but also in bodily forms. If study of this law should find a place in the science of dentistry, it would contribute to an education that

would lead to broader views." In Part IV. we are introduced to the "Philosophy of the Author's System," and as the views herein expressed underlie the whole of this work they should be given in his own words.

After allusion at length to the "effects of force on teeth" and "tissue-changes by movement of teeth," he remarks: "In regulating teeth by what we will call absorption . . . the tooth is made to plough its own way through the alveolar process, leaving a gap, so to speak, across which the pericemental fibres stretch, which interstitially fills with embryonic matter. This is gradually organized into that which finally becomes secondary alveolar tissue. Perfect reorganization of these tissues requires from one month to a year, sometimes longer, depending upon the age and condition of the patient." Again, on page 159: "Wherever there is tissue with nutrient circulation, there is tissue which serves to convey nerve-force; and where there is nerve-energy there is a substance which is subject to wear and tear. . . . Wherever tracks of nervous energy lead, there are tissues controlled by them; and where there is work, there will be wear and tear of those tissues, and, therefore, need periods of rest. Now, as the act of retrogressive metamorphological change is but a phase of tissue labor, it is easy to see that any such labor caused by moving teeth naturally comes under this head and belongs to this range of phenomena. Hence, in causing absorption, if the degree of force applied be kept within the limit of physiological law, the tissue-changes will be less painful than if the law is violated."

On page 162 the author gives an illustration of this force applied. After trying the most approved elastics for two weeks to move a refractory cuspid, a "very thin metallic band-strap was made to extend round the cuspid and first molar, the ends of the strap being connected on the buccal surface by means of a screw passing through nuts. This screw had sixty threads to the inch, and was shaped at the anterior extremity to fit a watch-key. This simple apparatus (which I denominate a clamp-band) having been applied, the screw was turned so as to cause a slight sense of tightness or pressure, but not enough to cause pain. The sense of tightness passed away within an hour. . . . The screw was turned one-half of a revolution morning and evening, thus advancing it one-half of a thread, or $\frac{1}{120}$ of an inch, by each operation, or $\frac{1}{24}$ of an inch per day. . . . This rate of movement was found to cause no pain. . . . The cuspid continued to advance at this rate daily. . . . This slow advance of the tooth . . . acted so admirably that

it was thought best to increase the rate of progress with a view to hurrying the operation, if possible. Accordingly, the screw was turned an entire revolution each morning and evening. . . . This caused some pain, which lasted about three hours, gradually passing away.

"It now became evident that this rate was too rapid; but to make the experiment still more satisfactory in a scientific point of view, the screw was advanced another half-thread each morning and evening, amounting to three revolutions daily. The pain now became almost continuous, accompanied by considerable inflammation."

The conclusion is thus summed up: "1. That in regulating teeth the force should not exceed the bounds of physiological functions. 2. That the plan of moving teeth by elastic materials, though practical, if kept under perfect control, is so difficult to manage that it often leads to pain and inflammation, and is sometimes dangerous to the future usefulness of the teeth, while a properly-constructed apparatus, intelligently operated by means of screws, insures beneficial results without pain or nervous exhaustion. 3. That if teeth are moved by absorption through the alveolar process about $\frac{1}{16}$ of an inch every morning, and the same distance in the evening, no pain or nervous exhaustion follows. 4. That while these tissues will allow an advance of a single tooth at this rate ($\frac{1}{16}$ of an inch) twice in twenty-four hours without exceeding physiological functions, if a much greater pressure be made the changes will become pathological."

The endeavor has been made to select parts clearly indicative of the idea upon which regulation by this method is based. While it will meet, undoubtedly, with opposition in its present form, as it has in the past when presented on the pages of periodicals, it is so clearly founded on well-known physiological laws that it is surprising that any other mode should have ever found favor. It is not understood that Dr. Farrar claims originality in the application of this well-known law of force in connection with tissue; but that he deserves credit for applying it and reducing it to a system no one familiar with the facts can, for a moment, deny. It was taught anterior to Dr. Farrar's active work in the profession, but at no time met with more than a passive recognition. Hence teeth have been moved as rapidly as possible, and the boast has not been infrequent that a regulating case has been completed and patient dismissed in a series of weeks which should have taken, perhaps, an equal number of months. If this portion of Dr. Farrar's work will

do something to impress the importance, nay, the absolute necessity of attention to physiological laws, it will have ample reason for having been written, for it is just here, in the opinion of the writer, where there has been the greatest neglect in practical treatment.

Part V. is devoted to "Nomenclature." This briefly gives the plan of the author by which, in his judgment, a better indication of "surface diseases of teeth" may be had.

The text cannot be clearly understood without the diagrams accompanying it. It would seem a mistake to attempt to change the nomenclature which custom has fastened on a profession. It has never yet been attempted with success, any more than the forceful introduction of a manufactured language. Nomenclature is a development, and while oftentimes it may be seriously objectionable, can only be changed by the slow processes of evolution to something better. The plan of the author has the merit of simplicity and is worthy of consideration.

Part VI. will no doubt prove the most interesting to the purely practical mind, as it is concerned with the "Explanation of the Principles in Construction of Regulating Apparatus." Here the author is entirely at home in describing the various devices used in the past and present. The illustrations are copious and most fully explain the text. He devotes one hundred and forty-four pages to describing the simple to the most complex device. While many of these forms have been made familiar by the author, the present arrangement, and, if the expression may be permitted, the dissection of parts, makes the text at once clear and instructive to all classes of mind. It would hardly seem possible that the objection, heretofore made, that these instruments tend to intellectual confusion could be maintained.

Part VII. is devoted to the consideration of "Retaining Devices." These will be found thoroughly described and of great variety of form adapted to peculiar conditions. This, next to the movement of teeth, is the most important feature of regulating. Some novelties are introduced,—novel in the sense of being part of regulating procedures,—one of which is the use of fillings as "retaining plugs." It will, doubtless, be said this is an old operation; but, if so, the writer has failed to observe it used as described.

Part VIII. is confined to the consideration of "Laboratory Rules for Making Regulating Devices." This is exhaustive, covering everything needed for practical work, and will be found invaluable to the dentist who has not had the experience in the working of metals so necessary in the construction of regulating apparatus,

and even to those familiar with the work the ideas will be very suggestive.

In this part is also explained the "application of apparatus," a very important matter, and the "retention of devices," being equally valuable, the author devoting considerable space to the "rules" governing it.

Passing over Part IX., on the "Philosophy of the Application of Force," which is a very important part, but which requires the diagrams to clearly explain it, we come to Part X. This is devoted to the "Eruption of Teeth," and Part XI. to "Antagonism of Teeth." Considerable space is given to this important matter in connection with irregularities, and in Part XII., on grinding teeth "improperly locked." The "evening the ends of teeth," and "interfering cusps," will at once recall to the practical mind the ample scope here for original work, and it is made use of by the author to the fullest extent, exhibiting thoroughness of detail and mastery of the subject.

Part XIII., "Interdental Spaces." This difficult matter is considered at length, and, as usual, the author has shown his ability in making his ideas clear by his original illustrations.

In chapter lxxv. of Part XIV., on "Extraction of Teeth for the Prevention and Correction of Irregularities," the author expresses his views on "The First Adult Molar," and, after reviewing the extreme opinions for and against the retention of this tooth, says, "It appears to me that there is really but little cause for these acrid discussions, and that the problem can be easily solved. If the tooth is comparatively sound, it is valuable for masticating purposes and should not be extracted except, perhaps, in rare cases, to make room for overcrowded cuspids and bicuspid. . . . On the other hand, if the first molar is badly decayed or is pulpless and so degenerated generally that it is impossible to preserve it for any considerable time, its disposal should be determined by these circumstances." He then continues a further discussion of this topic, but space will not permit more extended quotation.

It would give great pleasure to follow the author chapter by chapter in this most suggestive work; but, as it is, the matter has hardly been touched upon, nor, perhaps, has the reviewer been successful in gleaning the most salient points; but those given have aimed to illustrate the thoroughness of the work done. It is rare to find a book too full of valuable practical thought and experience to review easily; but this is one of this character. The temptation is to quote from every page.

The criticism may be made that Dr. Farrar has written too

exhaustively and covered more ground than is required, and in this way made it difficult for students of his peculiar theories to master them. To a certain class of mind it will unquestionably prove a problem. To such the recommendation may be made to discard the argument and philosophy and confine their labors to the purely practical. The author at all these points is peculiarly happy in clearing up a subject that has given so much mental disturbance to some when his earlier articles were first given to the profession.

It is hoped that enough has been said to show that the dentist who neglects to have this volume, and those that are to follow, in his library will fail in that intelligent appreciation of what has been accomplished by one man, and which constitutes a marked advance over anything in its special line that has preceded it in the whole history of dentistry.

This review would be incomplete without allusion to the perfect specimen of book-making that this volume presents. From composition to binding it shows most completely the perfection of art in this direction. Perhaps this could not be otherwise with "The De Vinne Press" imprint, but it is a satisfaction to note the progress made in this direction.

DENTAL SURGERY FOR MEDICAL PRACTITIONERS AND STUDENTS OF MEDICINE, by A. W. BARRETT, M.B. (London), M.R.C.S., L.D.S.E., Dental Surgeon to the London Hospital, etc. Second Edition, with Illustrations. P. Blakiston, Son & Co., Philadelphia, 1890.

That this little book of 136 pages has met a want seems evident from the fact that it has reached a second edition. It has, however, the objection common to all such works, that it must fail to reach the end desired, in that it omits, perhaps for the sake of brevity, most important matters, even for those for whom the book is specially intended.

On page 16, on the "Eruption of the Wisdom Teeth," no mention is made of the concealed wisdom tooth, deeply embedded in the inferior jaw. The diagnosis of this is difficult, and the results are as serious as the treatment is simple, that the absence of allusion to it is a decided loss to the general surgeon.

More space than necessary is given to "Irregularities," as the average medical practitioner could not make use of the suggestions, and in all probability would not understand them.

Under "Treatment of Caries," page 51, the following sentence occurs: "If this be not evident [exposure of the pulp], or, if the point of exposure be *very minute*, and the cavity of moderate size, a filling may be inserted." (Italics ours.) This is so at variance with accepted rules of practice that it occasions surprise.

On page 54 the following directions for using arsenious acid will doubtless interest, if it does not instruct: "Equal parts of yellow soap and arsenious acid are to be well worked into a bolus, of which a pellet, as large as the head of a good-sized pin, should be carried on an excavator into the washed and dried cavity. . . . The pellet may be held *in situ* by a plug of wool (cotton), which should be removed after twenty-four hours, and replaced with a wool and mastic (varnish) filling. . . . The pain caused by the action of arsenic is generally severe for *three hours*. . . . After six hours the pain has generally quite departed."

The application of "wool" (cotton) without the addition of "mastic" will strike the average operator as a remarkable proceeding.

On page 61 is the following statement: "Extraction or opening into the pulp-cavity afford the only means of relieving acute periodontitis, and a slight consideration of the cause leading up to this condition will serve to convince of the absolute inutility of applying escharotics, or *counter-irritants, to the gum overlying the affected part.*"

On page 82 will be found the following: "It is [pyorrhœa alveolaris] characterized by a condition of *chronic inflammation of the gum*, which becomes tumid, separates from the necks of the teeth, and *secretes an offensive, purulent fluid.*"

The space is not at command to quote all the statements which require correction or notice. Those given speak for themselves.

Such books, if written at all, should be condensed into the clearest statement of facts. The idea "that anything will do for a child" has passed away, and the opposite is now accepted that the more exact the statement can be made for the unlearned the better. It is to be presumed that the practice described in the text is based on the first and older idea. This explanation is preferred to the other, that this book represents the prevailing ideas of treatment in vogue at the present time in England.

Current News.

A METHOD of adding gum to ordinary artificial teeth. By George Cunningham, M.D. (Cantab.), D.M.D., D.D.S., R.C.S. (Eng.).

A reference to the formulæ for continuous-gum work in that very interesting chapter on moulding and carving porcelain teeth in the "American System of Dental Surgery," vol. ii., shows that they consist of ingredients of very different degrees of fusibility, and it seems to me that such ingredients as cryolite, Bohemian glass, flint glass, and "white glass" (whatever that may mean) are added for the purpose of reducing the fusibility or acting as a cement to the more refractory ingredients, such as silica or quartz, kaolin, and spar. I therefore set to work and instituted a series of experiments which may be briefly described as the very opposite; that is, adding the more refractory substances, which for convenience of discussion may be termed "tooth frit," for the purpose of giving stamina and cohesion to glass as a basis. Having satisfied myself as to the possibility of making an artistic and natural reproduction of gum color with mixtures of ordinary colored glass and vitreous enamels of various kinds, and also the possibility of controlling the fluidity, if I may be allowed the expression, of the molten glass, I found from a consultation of technical literature on the subject, which is woefully unsatisfactory from a purely scientific point of view, that, as we would anticipate, there is a very considerable difference as to the fusibility and the solubility of the various kinds of glass. After various and prolonged experiments which it would be tedious to detail, suffice it to say that I succeeded in turning out in this way an artificial denture of enamelled platinum which enabled me to approach one of the highest technical authorities,—namely, Mr. Harry Powell, of the celebrated White Friars Glass-Works, London,—with a view to interesting him in my experiments. . . . He very kindly placed his practical knowledge and technical skill at my disposal. By utilizing a formula for that mosaic work for which this ancient house is famous, we have succeeded in producing a body and enamel capable of fusing at a relatively low temperature. With regard to the artistic results achieved, the specimens which I now exhibit speak for themselves, even though the experiments are not yet complete. . . .

After having referred to the extreme fusibility of this new enamel, you will doubtless be surprised that the specimens presented to you are mounted on a highly-infusible metallic base. The new materials may be fused on copper, dental alloy, and gold, but it was early discovered that there was so far only one material—namely, platinum—which was available, and that for two reasons. First, during heating, chemical change takes place between one or more ingredients of the enamel and the metallic base, such as eighteen-carat gold, which has hitherto prevented my obtaining the natural gum colors on any other dental metallic base but platinum and pure gold. This change might possibly be obviated by using a glass which did not contain silicate of lead, but as there are other qualities to be considered, such as durability, strength, and solubility, it is considered that we obtain a stronger material, insoluble, or at any rate practically insoluble, in the mouth by keeping to the use of flint glass as the main ingredient.

Recent experiments on the behavior of this vitreous enamel on various metallic bases afford a reasonable clue as to the cause of the change of color in the vitreous enamel. Some of my specimens prove,—

1. That on pure gold there is no discoloration.
2. That on silver there is a yellow discoloration.
3. That on copper there is a black or greenish discoloration.

These facts seem to indicate, first, an oxidizing of the metal under the influence of heat, and, secondly, the metallic oxide, thus formed, imparting its color to the vitreous enamel, either directly or by causing some further chemical change in the constituents of the vitreous enamel. A similar discoloration takes place with the alloys, and therefore, in eighteen-carat gold, we obtain so much discoloration, both from the copper and the silver it contains, as to preclude its use in this method. So readily is the vitreous enamel discolored, that even on the pure gold specimen the one or two tiny points where coin gold was used as a solder, or to close a small fissure in the plate, were distinctly marked by a deep green local discoloration on baking the body.

Secondly, the coefficient of expansion of platinum and glass being the same, platinum must possess practically obvious advantages, especially as to adhesion, over any other material. If it be desired to give the denture the more acceptable appearance of gold, it is easy of accomplishment, as, for instance, by electro-gilding. Another method, which is not uninteresting, is well represented by this specimen. The metal base is made by sweating a piece of pure

gold and pure platinum together and rolling them out in the mills to the desired gauge, the enamel is infused upon the platinum surface, leaving an exposed surface of pure gold. Mr. Powell was extremely surprised to see the adhesion of the vitreous enamel on pure gold; although the attachment is not so strong as in the case of platinum, it is evident that by stippling we can get sufficient attachment for our purpose, though this statement may have to be revised later on, as no practical case on gold has yet been worn in the mouth for any length of time. On dental alloy, as one of the specimens shows, the enamel simply flakes off as the specimens cool from the unequal contraction of the dental and the enamel. It is still necessary by this method to use pure gold for the soldering of the teeth to the platinum base; but soldering, however, is not absolutely necessary, as demonstrated by this full set of continuous gum. Here the teeth were mounted as usual in wax on the metal plate; the case was then set teeth downward on a base of plaster, sand, and fire-clay, equal parts, the investment being carried over so as to embrace the tips of the teeth, and thus to hold them in position. The wax was then removed in the usual way, and the body built up around the teeth; the purple color which shows behind the front teeth in this specimen is due to a chemical action between the investment and the body, and indicates a danger, which, however, can usually be avoided. Although the enamel seems to adhere with tolerable firmness to the smooth platinum plate, it is better to increase its attachment by either stippling the plate or forming a boundary for the material by means either of a turned-up edge to the plate, or, what I think is better, soldering a rim of triangular wire of platinum with pure gold; all of which processes are exemplified in this specimen case (full upper). In this same case you will see that the enamel is equally applicable to English and American teeth, the front teeth being American, and the bicuspid and molars "Ash's diatoric."

For full, but especially for partial, dentures, both upper and lower, this new enamel seems to afford a great and important sphere of usefulness for the excellent English tube work. One reason why this work is so little employed is no doubt due to the fact that too frequently the dental mechanic of to-day is lacking either in the ability or in the patience requisite in nicely and accurately adjusting the tube teeth to the plate. This fine fitting of tube teeth, which occupies, even in the hands of an expert, the greater part of the time of manufacture, is entirely obviated by the new method of working it. The plate is struck up in platinum, and,

instead of gold, platinum pins are mounted in the usual way, only soldered with pure gold. No fine fitting of the teeth to the plate is necessary, as the body does that more effectually than the most expert manipulator of the corundum wheel. The use of sulphur cement and the working loose of the teeth is also obviated, since they are held firmly in position by the body of the enamel. The general excellence of ordinary tube work is further improved by the filling up of all spaces where food might lodge, while, without impairing in any way the utility and strength of the other method, the artistic coloring of the restored gum is, I think, a great advance on the often unsightly long-rooted tube teeth. . . .

For small blocks of a few teeth, I think it is evident from these specimens that the new method is of considerable utility and of artistic value in special cases. For small cases of bridge-work, removable or fixed, this enamel seems to have a great field of usefulness.

With regard to the process of firing, I have had great difficulties, as no existing form of furnace was found exactly applicable to the dimensions of the ordinary denture. If, however, the profession adopt this method of continuous-gum work, such difficulties will be easily overcome, as, by constructing and adapting a platinum muffle to the ordinary small Fletcher's muffle furnace, I have been enabled to turn out the specimens which have been exhibited to you. The furnace is simply an ordinary draught gas and air furnace, and the whole process of firing can be accomplished in about a quarter of an hour, though it is sometimes advisable to take a little longer time.—*Condensed from the Journal of the British Dental Association.*

WE learn that the *Archives of Dentistry* will cease to exist after this year. This is a matter of sincere regret, as the *Archives* has been one of our most valuable journals.

DR L. P. HASKELL says this of Babbitt's metal in casting :

"The dentist who says he has found 'no metal so reliable as zinc' has never used a *proper* Babbitt. It is not the *pouring* of zinc that alone gives trouble. It necessitates the use of *wet* sand, and the constant necessity of guarding against air-bubbles, a trouble that never occurs with oiled sand, which can be packed hard and is always ready for use. And the man does not live who can fit plates as easily and as uniformly perfect with zinc as with Babbitt."—*Ohio Journal of Dental Science.*

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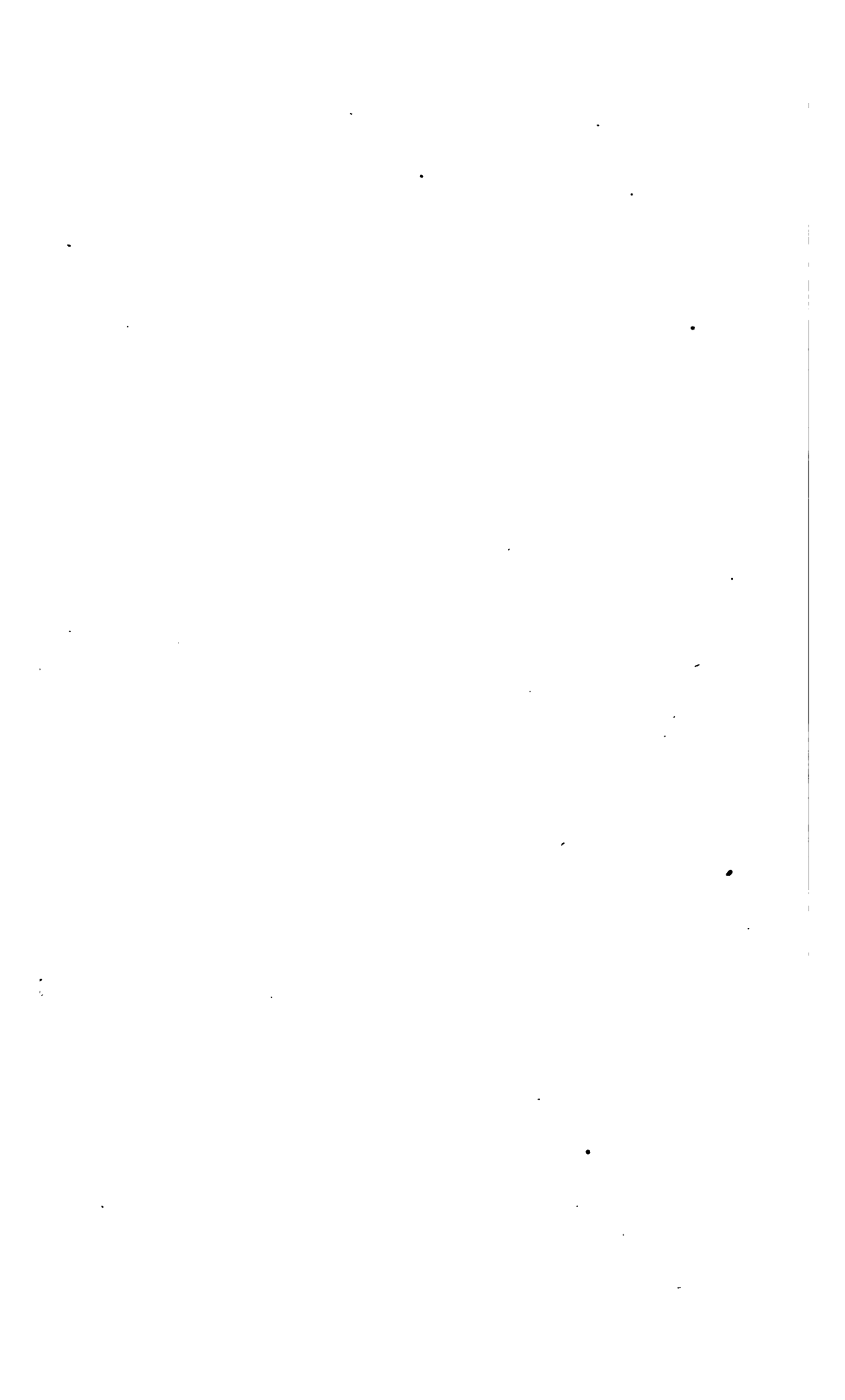
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